INDUSTRIAL DIAMOND ABSTRACTS

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DIAMOND MINING AND INDUSTRY

Swiss trade fair at Basle, 1598. Schweizer Mustermesse Basel 1958

Anon. *Draht* 1958 Vol 9 (6) pp 220-228 (June) (In German)

Various machines and measuring instruments are described, including the Copyrex copy grinding machine produced by the firm of Blaesi AG. This is for the manufacture of tools up to 50 mm wide, and uses two grinding wheels simultaneously for the preparation of two separate workpieces. A diamond grinding wheel can be attached for use on sintered carbides. The firm of Diametal AG shows sintered carbide tools and disks, as well as diamond profile dies which incorporate Widia cores. The same firm also shows diamond wire drawing dies. The firm of Agathon AG exhibits a number of sintered carbide grinding and lapping machines, and Anton Vogels Soehne AG show a group of sintered carbide grinding and cutting off machines. 21 illustr.

A *B 14.2 : C 5.0 : C 11.0 : C 12.0*

EXPO 58 Brussels Universal Exhibition

Anon. *Ind Diamond Rev* 1958 Vol 18 (210) pp 89-90 (May)

A brief description of the Diamond Pavilion is presented. *W* *B 14.1*

Vanguard nose cone highlights ' Mine to Missile ' exhibit

Anon. *Ind Diamond Rev* 1958 Vol 18 (211) p 112 (June)

A short description of the diamond exhibits at the ASTE Exhibition, Philadelphia, May 1-8, 1958.

W *B 14.1*

Diamonds feature in Philadelphia exhibition

Anon. *Ind Diamond Rev* 1958 Vol 18 (209) p 78 (Apr)

A short note on the ASTE Exhibition at Philadelphia from May 1-8, 1958, describes some of the diamond exhibits. *W* *B 14.1*

Man-made diamonds hit market

Gen Electr Co. *Iron Age* 1957 Vol 180 (19) p 87 (Nov 7)

A progress report on the production of synthetic diamonds by the General Electric Co. 1 illustr.

W *C 2.61*

Bigger-and-better Gauge & Tool Exhibition

Anon. *Ind Diamond Rev* 1958 Vol 18 (210) pp 86-88 (May)

Several new products are described in a review of the stands featuring industrial diamonds. These include the IDP Sparcatron equipment, Triefus electro-diamond tools, the L. M. Van Moppes syringe type applicator for diamond compounds, and the Diaform pantograph wheel-forming attachment. 2 illustr.

W *B 14.2 : C 1.6 : C 5.0*

[New journal]

Anon. *The Mineral Wealth of Madhya Pradesh* 1957 Vol 1 (1) 28 pp (Oct) ; *Econ Geol* 1958 Vol 53 (3) pp 356-357 (May)

The journal is devoted to the mineral resources of the state of Madhya Pradesh, which include diamonds. A short paper describes the diamond field of Panna, and includes diamond production figures for the producing countries of the world for 1952-1955.

W *C 1.24*

Hanover Fair. Die Hannover'sche Messe

Anon. *Metallwaren-Ind* etc 1958 Vol 49 (6) pp 231-241 (June) (In German)

One of the exhibits mentioned is Winter-Diaplast, a diamond paste for polishing and lapping sintered carbide tools, made by Ernst Winter & Sohn, Hamburg. The same firm exhibits diamond wheels for grinding and lapping. 41 illustr.

A *B 14.2 : C 12.21 : C 13.2*

Hanover—the industrial fair. Hannover—die Messe der Industrie

Anon. *Ind Anzeig* 1958 Vol 80 (52/53) pp 755-818 (July 4) (In German)

Ernst Winter & Sohn, Hamburg, show diamond tools for truing and profiling grinding wheels, diamonds for turning tools in the machining of non-ferrous metals, diamond grinding wheels for grinding and lapping sintered carbides and hardened steel, and diamond pastes, saws, and drill crowns. Greif-Werk GmbH, Hagen-Haspe, show a grinding and lapping machine which has a 20 mm diamond cup-wheel of 150 mm diameter for cutting sintered carbide. 300 illustr.

A *C 5.0 : C 6.0 : C 8.0 : C 9.0 : C 12.0*

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In the land of diamonds

B. Babliuk. *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 600 (May) (Original in Russian)

Book, Izd-vo Tsk VLKSM Molodaia gvardiia, Moscow. 1957, 221 pp (In Russian). [Not in library of Ind Diamond Inf Bur]. *X* *C 1.24*

Diamonds reflect industry pace

G. G. Carr. *Iron Age* 1957 Vol 180 (11) p 92 (Sep 12)

The effect of the increasing use of industrial diamonds is discussed in relation to diamond production. It is believed that any increase in diamond production will be balanced by the increasing use of industrials. The current breakdown of [US] industrial diamond sales is : 40% for grinding wheels, 40% for mining bits and saw blades, and 20% for miscellaneous tools. The fluctuation of [US] defence orders used to affect the sale of industrials as defence materials, *eg* jet engine blades, are a prime user of diamonds ; increasing use generally in industry is helping to offset the effects of fluctuation. 1 illustr.

W *C 1.5 : C 1.6*

Mineral resources of Yakutia

N. V. Cherskii. *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 600 (May) (Original in Russian)

Book, Yakurakow knizhnoe izd-vo. 1957, 163 pp (In Russian). [Not in library of Ind Diamond Inf Bur].

X *C 1.24*

Expansion of Israel's diamond industry

D. Danieli (Israel Diamond Cutting Works Fed). *Financial Times* 1958 No 21,455 supplement p 7 (Apr 28) ; *Diamond News* etc 1958 Vol 21 (8) pp 19-20 (May)

In a general review of the industry it is stated that it has grown from 75 factories employing 1,300 workers in 1949, to 140 plants employing 3,790 workers in 1958. Some export and sales figures are given.

W *C 1.5*

Tracing ore boulders as a prospecting method in Canada

A. Dreimanis. *Canad Min & Metall Bull* 1958 Vol 51 (550) pp 73-80 (Feb) ; *Trans* 1958 Vol 61 pp 49-56

Paper to the joint session of the Canadian Inst of Mining Geology Div and the Geological Assoc of Canada, at the Annl Gen Mtg, Ottawa, April, 1957.

It is briefly mentioned that the source of diamonds found last century in drift south of the Great Lakes, and particularly in Wisconsin, remains unknown. 5 illustr, 38 ref. *W* *C 9.0*

Knowledge of diamonds creates sales

H. Fletcher Collins (Am Horlog & Jeweller). *Diamond News* etc 1958 Vol 21 (8) pp 37-38 (May)

An appreciation of the uses of industrial diamonds. Most of the information presented is of a very general nature, but statistics relating to production, purchasing, and manpower are given. *W* *C 1.6*

Impressions of the Industrial Fair at Hanover. Eindruecke von der Industrie-Messe in Hannover

G. Steinke. *Glas-E-Ka-Techn* 1958 Vol 9 (6) pp 215-224 (In German)

Included in the machines and instruments shown is an ultrasonic instrument for boring holes of any desired dimensions in hard substances, *ie* glass, ceramics, and gemstones. Ernst Winter & Sohn, Hamburg, display various diamond tools for truing grinding wheels, working non-ferrous metals and natural and artificial materials, as well as diamond grinding wheels for working sintered carbide and ceramics. 10 illustr.

A *B 14.2 : C 5.0 - C 12.0 : C 12.9*

The chrysolite of the kimberlite pipes of Yakutia considered as precious stones for jewellery. Les chrysolites des cheminées Kimberlitifères de Yakoutie en tant que pierres précieuses pour la joaillerie

I. V. Il'in & coll. *Razvedka i okhrana nedr ; Prospection et Protection du Sous-Sol* 1958 (2) pp 7-9 (In French ; original in Russian)

The kimberlite of Yakutia is composed mainly of olivine, of which the best preserved crystals are found in the pipes known as the 'Udachnaja' and the 'Dal'njaja'. Some of these crystals are absolutely pure and transparent. These are the chrysolite crystals used for jewellery. They can be mined and processed alongside the diamond found in the same pipes. 1 table. *A* *C 1.24 : C 1.25*

On some kimberlite bodies of the Omonoos river basin, the Olenek region

M. A. Krutoyarsky. *Zap Vses Mineralog Obshch* 1958 Vol 87 (2) p 166 (Original in Russian—English transl in preparation)

X *C 1.24*

On the petrography of Siberian kimberlites

N. A. Kuryleva. *Zap Vses Mineralog Obshch* 1958 Vol 87 (2) p 233 (Original in Russian—English transl in preparation)

X *C 1.24*

Mr. H. F. Oppenheimer on sound organisation of diamond industry

H. F. Oppenheimer. *Diamond News* etc 1958 Vol 21 (8) pp 6-10 (May)

The statement circulated to shareholders of De Beers Consolidated Mines Ltd for the 70th annual general meeting is reviewed. Mr. H. F. Oppenheimer discloses that the Diamond Research Lab, Johannesburg, is testing the GEC synthetic diamonds to determine their advantages and disadvantages. A chart is shown which depicts the production and sales by the De Beers group from 1938 to 1957 ; the figures are broken down into total, gem, and industrial. The financial position of the company is briefly analyzed, and, among other subjects dealt with, diamond smuggling and technical improvements are mentioned. 1 illustr, 1 table.

W *C 1.5 : C 2.6*

Diamonds of the ancient Timan

V. Ruzhitskii. *Vokrug Sveta* 1958 (2) pp 1-4 (Feb) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 461 (May) (Original in Russian)

X *C 1.24*

PHYSICAL, CHEMICAL, & MECHANICAL PROPERTIES OF DIAMOND AND OTHER HARD MATERIALS

Chemical problems in the technique of semi-conductors I & II. Chemische Probleme in der Halbleitertechnik

E. Gastinger. *Oesterr Chem-Ztg* 1958 Vol 59 (3/4) pp 34-38, 39-40 (Feb) ; (5/6) pp 70-76 (Mar) (In German)

The subject is studied with particular reference to germanium and silicon, and two diagrams show the structure of a diamond-type crystal. The production of germanium and silicon is considered, and the manufacture of transistors is briefly discussed. 8 illustr, 144 ref, 6 tables. *A* *C 2.5 : C 8.7*

Development of a modern high vanadium die steel

P. R. Borneman (Allegheny Ludlum Steel Corp). Preprint of paper to SAE Nat Prodn Mtg & Forum, Buffalo, NY, Mar 20-22, 1957

The development of Ottawa 60, a new high vanadium die steel, is traced. Ottawa 60 was produced as a die steel which would eliminate galling and seizing in deep drawing operations. It was reasoned that the greater is the amount of carbide in the microstructure, then the greater is the hardness and wear resistance of the steel. Vanadium carbide was therefore selected for the alloy which was finally 12% vanadium, 3.25% carbon, 1% chromium, and 1% molybdenum. In most machining operations normal tooling can be used successfully, though at reduced speeds. Sawing can be accomplished on a power hacksaw, using very coarse blades (*ie* a maximum of 4 teeth/inch).

The grindability index of Ottawa 60, on a table on which carbon steel is 40, is reported as 0.4. Grinding wheels with a free cutting bond are suggested, and diamond wheels are recommended for finish grinding.
W *D 14.5*

Studies on the surfaces of diamond

S. Tolansky. *Ind Diamond Rev* 1958 Vol 18 (209) pp 74-77 (Apr)

Report of the Herbert Smith Memorial Lecture to the Gemmological Assoc of Gt Britain, London, Apr 2.

Prof Tolansky spoke on selected aspects of original work carried out by him in the past 10 years concerning three broad aspects of the microstructure of diamond surfaces. These included (*i*) micro-studies on the shapes and distributions of trigons on octahedral faces, (*ii*) investigations on the etching of diamond, and (*iii*) an experimental study of the production of percussion marks on diamond.

The lecture is briefly reported, and four interesting photographs of diamond surfaces are shown. 4 illustr.
W *C 2.4 : C 2.5*

More on GE diamonds

Anon. *Mineralogist* 1958 Vol 26 (6-8) p 183 (June-July-Aug)

University College, London, examined GEC synthetic diamonds and found that most of the crystals were distorted, while in every case a strong 200 reflexion was present, along with other optical properties due to lattice structure peculiarities. It was found that 0.2% nickel, and smaller amounts of Si, Al, Fe, Mn, Mg, Na, K, Ti, Ca, Cr, Cu, and B were present, the nickel obviously having been introduced in the manufacture of the stones. *A* *C 2.6*

Adsorption plastification of surface layers due to lubricants used in the cold working of metals

S. Ya. Veiler, V. I. Likhtman, P. A. Rebinder. *Doklady Akad Nauk SSSR* 1957 Vol 116 (3) p 415 (Sep); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 358 (May) (Original in Russian)
X *D 14.5*

The friction and wear of diamond

M. Seal (Cambridge Univ). *Ind Diamond Rev* 1958 Vol 18 (209) pp 67-70, 72-74 (Apr)

The author attempts to explain the anisotropy in the wear rate of diamond, which is the chief objection to the suggestion of a thermal mechanism in the wear of diamond. Experimental procedure is described in detail, and reference is made to previous works on this subject. 6 illustr, 20 ref. *W* *C 2.23*

The strength of brittle solids

D. Dollimore, S. J. Gregg. *Research* 1958 Vol 11 (5) pp 180-184 (May)

The strength of a brittle solid is much less than the value calculated from other known properties of the solid, and moreover it is often less if measured in the presence of a vapour than *in vacuo*. Both phenomena can be explained along the lines of the Griffith crack hypothesis, but the effect is best understood in terms of the swelling produced by sorption of the vapour, rather than in terms of the reduction in surface energy consequent on sorption. 3 illustr, 24 ref, 1 table.
X *C 2.22*

Structure and edge-life of ceramic cutting materials. Gefuege und Standzeitverhalten keramischer Schneidstoffe

R. Fleck, M. Gappisch. *Ind Anzeig* 1958 Vol 80 (47) pp 689-692 (June 13) (In German)

The grinding surfaces of ceramic tools are examined with electron microscopes, and also by means of the Triafol-SiO-pressure method. Comparison is made with sintered carbide tools. It is found that the edge life of ceramic oxide tools depends to a large extent on the mesh size of the cutting material. Those of a fine mesh size give better results than those of coarse mesh. Only diamond-impregnated grinding wheels can be used to grind and polish the material, and, owing to its brittleness, great care must be exercised in this operation. 10 illustr, 7 ref, 1 table.
A *C 12.0*

Dislocations in diamond-type lattices

P. J. Holmes. *Phys Soc Rep Mtg on Semiconductors* 1957 pp 27-32; *Inst Met Journ* 1958 Vol 86 (6)—*Metall Abstr* Vol 25 (6) col 455 (Feb)

A summary of experimental crystallographic evidence on the types of dislocation existing in materials of the diamond structure. A distinction is drawn between macroscopic growth effects and dislocations capable of analytic treatment by current theories. Possible dislocation models of the latter type are described, and their dissociations and interactions are discussed. The correlation of etch pits with dislocations is considered.
W *C 2.5*

The application of the electron microscope to the examination of hard materials. Ueber die Anwendung der Elektronenmikroskopie zur Untersuchung von Hartstoffen

W. Mader. *Radex-Rdsch* 1956 (4/5) pp 247-251; *Werkstoffe & Korrosion* 1958 Vol 9 (4) p 232 (Apr) (In German)

This review of the use of electron microscopes in powder metallurgy pays particular attention to the examination of the raw materials for sintered carbide.
A *D 13.5*

The colour problem of ruby

L. Singh (Nat Chem Lab, Poona, India). *Nature* (London) 1958 Vol 181 (4618) pp 1264-1265 (May 3)

Letter to the Editor.

The writer offers a speculative concept in explanation of the anomalies associated with the colour change of ruby. 1 illustr, 4 ref. *W* *C 2.5*

Etching and orientation measurements of diamond-type crystals by means of light figures

G. A. Wolff & coll. *Zeits Elektrochem* 1957 Vol 61 (1) pp 101-106; *Inst Met Journ* 1958 Vol 86 (6)—*Metall Abstr* Vol 25 (6) col 452 (Feb) (Original in English)

Back reflexion and cylinder reflexion light-figure methods are used to examine etched single-crystal surfaces. *W* *C 2.4*

X-ray crystal structure. Etude radiographique des cristaux

D. McLachlan. *Métall & Constr Mécan* 1958 Vol 90 (4) p 235 (Apr) (In French ; original in English)

Book, McGraw Hill Book Co, London.

The work shows how the form of crystals is determined by deviation of x-rays passing through them, and explains in detail the methods of application and the uses of this technique. [Book not in library of Ind Diamond Inf Bur]. *A* *C 2.4 : C 2.5*

DAS 1,027,192 (Apr 19, 1955) **J. F. H. Custers, H. B. Dyer, R. W. Ditchburn, Industrial Distributors (1946) Ltd**

Method for improving the colour of diamonds

The diamonds are subjected to irradiation with gamma-rays of between 0.5 and 1.3 MeV. After irradiation, the diamonds are preferably heated to 450 deg Centigrade. Cobalt 60 or Caesium 134 may be used as the gamma-ray source. The dosage should preferably lie between 1.5 and 3×10^8 Roentgens. (4 claims). Ref cited : Books by W. Crookes (1909), J. M. Cork, and E. H. Kraus and C. B. Slawson (1947). *J* *C 2.01*

DIAMOND IN INSTRUMENTS, ETC

Engravers

Anon. *AB Metal Digest* 1958 Vol 4 (2) p 17 (Mar)

Among a number of engraving tools described is the 1391 Vibro-graver kit, supplied with one diamond point, one tantalum carbide point, and one ball point. The diamond point, No 1391-3, is available separately. 4 illustr. *W* *C 10.0*

Ultra-microtome (Huxley pattern)

Cambridge Instrument Co Ltd, 13 Grosvenor Place, London SW 1. *Instrument Pract* 1958 Vol 12 (5) p 549 (May)

Designed by Mr. A. F. Huxley, the microtome utilizes a diamond or glass knife to cut sections of 100-1,500 AU. *W* *C 3.26*

BP 795,935 **Industries Musicales & Electriques Pathé Marconi**

(Dec 17, 1954—conv date, France)

Gramophone pick-up needles

The reading point of sapphire or other hard material is formed by a small sphere of a radius of 25 microns for long playing records or 75 microns for standard records, bonded to the metal body of the needle by a thermo-setting resin, *eg* by Araldite. Fig 1 shows the

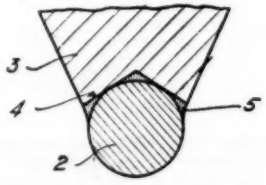

Fig 1. Tip portion of needle. BP 795,935.

tip portion of a needle with sphere 2 fixed to an intermediary steel part 3 with a conical recess 4. The thermo-setting bond is 5. (7 claims, 5 illustr). *J* *C 3.01*

HARDNESS AND WEAR TESTING

Influence of electric current on tool wear

V. Solaja, H. L. Hughes (Wolverhampton & Staffordshire Coll of Tech, Wolverhampton). *Research* 1958 Vol 11 (5) pp 207-208 (May)

Letter to the Editor.

Experiments were conducted to determine whether, when turning steel with carbide tools, the passing of an electric current between tool and workpiece would, by compensating the thermo-emf generated at the cutting point, decrease tool wear and increase tool life as concluded by experiments at the Technische Hochschule, Aachen, which were not confirmed by work carried out at the Technische Hogeschool, Delft. Under the experimental conditions used, and within ±10 amps, no influence attributable to current was noticeable, though certain other effects were observed outside this limit. 3 illustr, 3 ref. [See also *Bibl Ind Diamond Appl* 1957 Vol 14 p B82 (May), and *Ind Diamond Abstr* 1958 Vol 15 p A69 (May)]. *W* *C 12.9*

Estimate of the abrasion resistance of metals

M. M. Tenenbaum. *Zhurn Tekhn Fiz* 1957 Vol 27 (5) pp 1106-1117 ; abstr *Inst Met Journ* 1958 Vol 86 (5)—*Metall Abstr* Vol 25 (5) col 332 (Jan) (Original in Russian)

Description of experiments in which a trihedral diamond point was drawn across clean polished surfaces of Pb, Sn, Cu, Fe, W, Mo, and various steels. The forces F to move the diamond under various loads, and the widths S of the resultant scratches were measured. F/S^2 was found to be nearly independent of the load on a given material. Graphs of $1/S^2$ were linear for pure metals. A discussion is given of the connexion between the results obtained by the scratching method and studies of the abrasion resistance as a function of hardness. *W* *C 4.0*

Making a method of wear testing more accurate

V. A. Shevchuk. *Zavods Lab* 1957 Vol 23 (12) p 1492 ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 405 (May) (Original in Russian) *X* *C 4.0*

The relation between the microhardness of solid solution crystals and the alloy composition in three component systems, according to natural laws

N. N. Glagoleva, V. M. Glazov. *Izvest Akad Nauk OTN* 1958 Vol 1 pp 130-134 ; *Inhaltsverzeichnisse sowjet Fachzeits* 1958 Vol 7 (5) p 304 (May) (Original in Russian) *X* *C 2.23*

Wear of metals

F. T. Barwell (Mech Engg Res Lab). *Inst Met Journ* 1958 Vol 86 (6) pp 257-269 (Feb)

Twenty-eighth Autumn Lecture to the Annl Autumn Mtg of the Inst of Metals, Glasgow, Sep 17, 1957.

The mechanism of wear is discussed, and the forms which it may take are described. The latter include speed and load, geometry, surface roughness, lubricant, the nature of oxide films, and the metallurgical structure of the sub-surface regions. Certain common conditions encountered in engineering applications are illustrated from current research at the Mech Engg Res Lab. It is concluded that metallurgical structure may have a considerable effect in determining the wear resistance of materials. 24 illustr, 14 ref. *W* *C 2.23*

Attachment for performing short-duration tension and hardness tests on metals at high temperatures

L. M. Feigin. *Zavods Lab* 1957 Vol 23 (12) p 1514; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 405 (May) (Original in Russian)

X *C 4.0*

Textbook of hardness testing of metals. Taschenbuch der Haertepruefung metallischer Werkstoffe

K. Frank, reviewed by H. Ordas. *Giesserei* 1958 Vol 45 (6) p 154 (Mar) (In German)

Book, Winter'sche Verlagshandlung. 1956. Price: DM 13.80 (In German).

The book contains practical information on the most outstanding experiments in static and dynamic hardness testing and on some specialised experiments. [Book not in library of Ind Diamond Inf Bur].

A *C 4.0*

Automatic devices for checking the hardness of fuel atomizer needles

K. L. Bespalov, A. S. Lanin. *Avtom Prom* 1958 (1) p 35 (Jan); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 398 (May) (Original in Russian)

X *C 4.0*

Relationship between Scleroscope, Rockwell, and Brinell hardness readings

N. R. Arant, J. J. Marsalka. *Iron & Steel Eng* 1958 Vol 35 (2) pp 160-161 (Feb)

Experiments are described as a result of which a Scleroscope-Rockwell-Brinell conversion curve for use with chill iron, grain iron, and heat-treated standard carbon-steel bars was developed. Experimental curves are shown. 1 illustr. *W* *C 4.0*

Testing metallic materials. Die Pruefung metallischer Werkstoffe

Anon. *Technica* 1958 Vol 7 (14) pp 797-800 (July 4) (In German)

A general survey of the development of hardness testing methods is made, with separate sections devoted to the Brinell, Vickers, and Rockwell instruments and formulae. 10 illustr. *A* *C 4.0*

BP 796,782 **L. Tschirf, F. Gaertner**
(July 9, 1953—conv date, Austria)

Hardness testing methods and apparatus therefor

Accurate hardness testing of internal surfaces in limited spaces, *eg* inside tubes, cones, internal threads, etc, is difficult. A lever system can only be used up to a limited length owing to bending stresses which would influence the correct measurement of the indentation forces. Radial movements as used in gauging the inside width of bores cannot easily be adapted to provide the accurate control of forces required for hardness tests. As shown in Fig 2 and 3, the tester is introduced into the workpiece 6 and clamped there by a chucking force between the wall engaging points 23, 24, 25, and 26, so that the tester is centrally held in

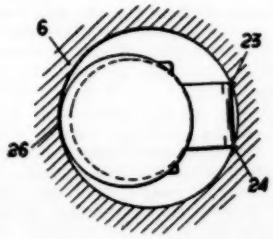

Fig 2. A view of the tester in the workpiece. BP 796,782.

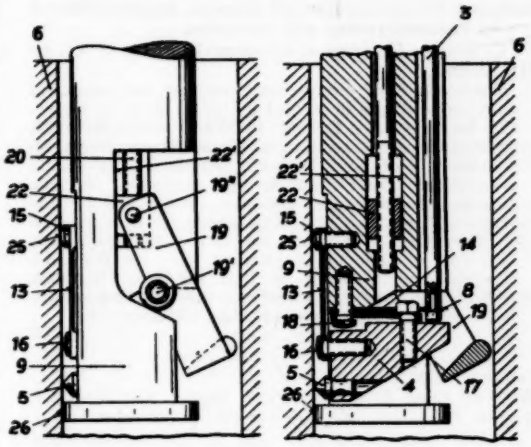

Fig 3 and 4. Diagrams showing the tester in the workpiece. BP 796,782.

the bore of the specimen 6. The chucking force is derived from lever 19, Fig 3, being screwed down by bolt 20 pushing fulcrum 19' along the cam face shown. The chucking force is independent and greater than the indenting force. Indenter 5, Fig 4, is arranged on prismatic spring pivot 4 between leaf springs 13 and 14, and pressed against the surface to be tested by rod 3 transmitting a load applied to a plunger (not shown). 18 claims, 5 illustr). *J* *C 4.01*

DAS 1,025,171 (Mar 20, 1952) **A. Grossmann, Otto-Wolpert-Werke GmbH**

Hardness tester working according to the method of measuring depth differences with automatic control of the testing operation

In known arrangements, the application of preload and main load is carried out in a predetermined rhythm. However, the path of the indenter point is different for different sample thicknesses, which means different loading periods so that no uniform tests are possible. In the new tester, the part carrying the loading and measuring devices is movably connected to the stationary base. This movable part is raised by an eccentric device against spring pressure, and then lowered onto the surface of the testpiece. The eccentric device is force-constrained connected to the cams controlling the loading and measuring devices, so that the depth differences are measured by starting from the surface of the testpiece, independently of the thickness of the sample, as the loading device has always the same position with regard to this surface. (1 claim, 1 illustr). Ref cited: GP 568,911 and 578,601.

J *C 4.01*

TRUING OF GRINDING WHEELS

Dresser cut is continuous

Hoglund Engg & Mfg Co, 343 Snyder Ave, Berkeley Heights, NJ. *Steel* 1958 Vol 142 (18) p 112 (May 5)

The Hoglund 105 hydraulic contour wheel truing attachment provides an uninterrupted cut across the wheel. The diamonds are optically set, and truer readjustment is unnecessary during diamond replacement. 1 illustr. *W* *C 5.0*

Increased life and accuracy of diamond dressers achieved by diamond cutting and orientation

H. C. Miller. *Grinding & Finishing* 1958 Vol 3 (12) pp 31-33 (Apr)

Old methods of cutting are described and compared with new methods developed by H. C. Miller of Super-Cut Inc, and more recently by the Diamond Research Laboratory of Johannesburg, South Africa, based on laboratory techniques of back reflexion x-ray crystal orientation. These methods of orientation and the present knowledge of hardness properties of the diamond have enabled the Golconda Corp, a division of Super-Cut, to produce the Orvec diamond truer. This tool is made up of oriented slabs cut from the diamond and mounted so that the ideal hardness vector is correctly oriented to the grinding wheel. Tests with this tool are described. 5 illustr.

A *C 5.0*

Contour wheel dressers

Hoglund Engg & Mfg Co, 343 Snyder Ave, Berkeley Heights, NJ. *Steel* 1958 Vol 142 (11) p 122 (Mar 17)

Wheel truer models 93 and 95 are hydraulically operated attachments for both right- and left-hand cylindrical grinders. They are suitable for wheels 2½ in. wide × 2 in. deep on multiple wheel grinders, and for grinding applications for which single-spindle grinders are unsuitable. 1 illustr.

W *C 5.0*

Wheel truing with a hydraulic attachment

J. Waller. *Ind Diamond Rev* 1958 Vol 18 (210) pp 91-93, 99 (May)

The manufacture of a hydraulic truing attachment utilizing diamond tools is described, with accompanying diagrams. 4 illustr. *W* *C 5.0*

Wheel resizing unit

Wickes Corp, Saginaw, Mich. *Iron Age* 1958 Vol 181 (6) p 136 (Feb 6)

A new grinding wheel salvaging machine uses crush-type truers for resizing diamond and other grinding wheels of 8-42 in. diameter. Resizing is reported to take about 15-20 minutes. 1 illustr.

W *C 5.0*

DAS 1,029,698 **R. G. Roshong, Crane Packing Co** (Mar 25, 1954—conv date, USA)

Device for truing the surface of annular lapping disks

It is known that variations of the truing effect of truing rings driven by a rotating lapping disk can be obtained by shifting their position with regard to the disk. This permits the restoration of the face of a lapping disk which has become convex or concave during lapping operations on workpieces of various forms, weights, and materials. A better compensating effect, however, without the necessity for shifting the system of truing rings, can be achieved by varying the speed of the truing rings extending beyond the periphery of the lapping disk. It is further preferable to enable the ring or rings also to rotate in the opposite direction in order to correct greater convexities or concavities. The speed variations may be obtained by providing a multi-speed gear box for the rotation of the truing rings. (2 claims, 1 illustr). Ref cited : 2 DBP ; book by H. Groesel ; *Industrieblatt* 1954.

J *C 5.01*

LITERATURE REQUESTS

When applying for the loan of literature abstracted in this journal, please quote the title of the article, the name of the author, and the number of the page on which it appeared.

FINE BORING AND FINE TURNING OF METALS

Cost crisis . . . how to beat it : Lathes trim finishing costs

Anon. *Steel* 1958 Vol 142 (19) pp 86-87 (May 12)

An estimated annual saving of $40,000 was accomplished by reducing the number of turning operations in the production of copper-plated rotogravure cylinders. The old process entailed the turning of the cylinders to the closest possible tolerance, and four cylindrical grinding operations. A new lathe was bought, and now the first finishing operation is a pass across the cylinder with a carbide tool at about 1,300 surface ft/min, with a tolerance of ±0.0002 inches. The carbide tool is then replaced by a diamond tool, and a finish pass is made at high speed. The diamond tool feeds at 0.0037 in./revolution. Only a single polishing step is required to produce the specified surface finish of 2 microinches. 2 illustr.

W *C 6.0*

Ceramic oxide cutting materials in precision working—examples from production. Oxydkeramische Schneidstoffe bei der Feinbearbeitung—Beispiele aus der Produktion

F. Puehler, R. Wagner. *Ind Anzeig* 1958 Vol 80 (47) pp 673-676 (June) (In German)

In order to find out whether ceramic oxides are more economical and more efficient than diamond tools, experiments were carried out on a hub, 62 mm in diameter, of PbBz 25 with a hardness of 35-45 kg/mm, and on a piston-pin bushing, 130 mm in diameter, of PbSnBz 22 with a hardness of 60-80 kg/mm. A maximum surface roughness of R = 4 microns is required in this operation. Turning speeds of 2,000 and 750 rev/min, cutting speeds of 390 and 310 m/min, an advance of 0.5 and 0.06 mm/rev, and chip depths of 0.2 and 0.2-0.3 mm were used for the hub and the piston-pin bushing respectively. With these particular materials, surface finish, costs, and time taken with ceramic oxides were better than those achieved with diamond. 10 illustr, 3 tables.

A *C 12.0*

Tool sharpening, a precision operation. Werkzeugschaerfen eine Praezisionsarbeit

Anon. *Schliff & Scheibe* 1958 (2) pp 1-4 (In German)

Instructions are given as to the conditions which determine the quality of sharpening, the right sort of sharpening instrument, and the right time to sharpen a tool. *A* *C 12.2*

Instruments, Electronics, and Automation Exhibition, Olympia, London, April 1958

Anon. *Ind Diamond Rev* 1958 Vol 18 (210) pp 90-91 (May)

A short review mentions several products of interest to the precision engineer, *eg* machine tool control systems and ceramic tools.

W *B 14.2 : D 15.0*

Practical hints for the machining of stainless and heat-resistant steels. Praktische Winke fuer die Zerspanung nichtrostender und waermebestaendiger Staehle

Anon. *Technica* 1958 Vol 7 (14) pp 807-810, 845 (July 4) (In German)

The various methods of machining steels, *ie* milling, planing, drilling, cutting, grinding, and trimming are discussed, and recommendations are made as to the best materials and speeds, chip size, angle, advance, etc, for each operation. Diamond files are recommended for use on the cutting edges of the tools used for filing and for milling. 14 illustr.

A *C 12.0*

Ceramic cutting tools

Anon. *Mech World* etc 1958 Vol 138 (3466) pp 210-211 (May)

A general article reviews the position of ceramic cutting tools, especially in relation to carbides. Ceramic tools are reported to outlast carbides about 25×, although ceramics are more expensive and more brittle. It is stated that ceramic tools should be dry ground with metal-bonded diamond wheels; 150 mesh is recommended for shaping or roughing, and 320 mesh for finishing. 3 ref. *W* *C 12.9*

Cost crisis ... how to beat it: Boost your machining speeds

Anon. *Steel* 1958 Vol 142 (18) pp 84-85 (May 5)

Several examples are given of companies who have reduced the costs of machining operations by increasing speeds and changing tooling. 2 illustr. *W* *C 12.5*

How to get more for your metalworking dollar: machining nonferrous metals

Anon. *Iron Age* 1958 Vol 181 (17) pp 113-128 (Apr 24)

The article provides information on proper tooling, speeds and feeds, depth of cut, lubricants, and coolants for the machining of aluminium, magnesium, copper and copper-base alloys, and titanium. Diamond tips are recommended for light finishing cuts on aluminium. 20 illustr, 8 tables. *W* *C 12.0*

Grinding and lapping mineral-ceramic cutting tips

A. A. Gilev. *Mashinostroitel* 1958 (3) p 27 (Mar); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 12.2*

How carbide tools are maintained

L. S. Inscoe jun. *Southern Power and Ind* 1958 pp 52, 58-59 (Jan); *PERA Bull* 1958 Vol 11 (4) p 118 (Apr)

Briefly describes the setting up of a carbide tooling department in a furniture manufacturing company. *X* *C 12.2*

Evaluating ceramic tools. I

D. R. Kibbey, W. T. Morris. *Automatic Machining* 1958 pp 36-38 (Jan); *PERA Bull* 1958 Vol 11 (4) p 118 (Apr)

An analysis of variables to determine how each affects cutting tool performance. *X* *C 12.5*

Chip producing machine tools for economical production. Spanabhebende Werkzeugmaschinen fuer die wirtschaftliche Fertigung

A. Linek. *Metalloberflaeche* 1958 Vol 12 (7) p 208 (July) (In German)

Book, Fachverlag Schiele & Schoen, Berlin. 1957, 88 pp, illustr. Price: DM 8.40 (In German).

Besides the usual horizontal and vertical milling machines, universal, surface, copy, and special milling machines are described. [Book not in library of Ind Diamond Inf Bur]. *A* *C 6.0*

Geometric parameters of mineral-ceramic cutting tips

I. L. Tikhonov. *Mashinostroitel* 1958 (3) p 26 (Mar); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 12.0*

Operating cutting tools having mineral-ceramic tips

E. K. Yushkar'. *Mashinostroitel* 1958 (3) p 28 (Mar); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 12.2*

New geometry of screw-thread cutting tools

V. T. Margolin. *Mashinostroitel* 1958 (3) p 24 (Mar); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 12.2*

How to get the best from ceramics

H. D. Moore, D. R. Kibbey. *Canad Machinery* 1958 pp 64-66, 126 (Jan); *PERA Bull* 1958 Vol 11 (4) p 118 (Apr)

Describes a research programme designed to gain useful and reliable information about ceramic tool materials. *X* *C 12.5*

Increasing the strength of cutting tools in machining with cooling under high pressure

A. V. Pakhomov. *Vestnik Mash* 1958 Vol 38 (2) p 55 (Feb); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 400 (May) (Original in Russian)

X *C 12.0*

Determining the most favourable position of cutting tools in adjusting machine tools

P. A. Pakidov. *Trudy Omsk Mash Inst* 1956 (1) p 21; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 6.0*

Problems encountered in the working of titanium alloys. Die Probleme bei der Bearbeitung von Titanlegierungen

M. Shaw. *Techn Mitteilungen* 1958 Vol 51 (5) pp 211-216 (May) (In German)

The characteristics of titanium alloys are expounded in detail, with separate sections on the cutting temperatures, chip formation, cutting strengths and specific energy, friction properties, and milling and grinding processes. The milling is usually carried out by means of sintered carbide tools, and the grinding with aluminium oxide grinding wheels. 9 illustr, 3 ref, 6 tables. *A* *C 12.0*

Machining of aluminium with diamonds and the cutting of close tolerance threads

K. Sterl. *Aluminium* 1957 Vol 33 (9) pp 613-614; *Inst Met Journ* 1958 Vol 86 (8)—*Metall Abstr* Vol 25 (8) col 628 (Apr)

The advantages of diamond tools are described, with special reference to the high cutting speeds and superfine finishes available. *W* *C 6.0*

Development of metal cutting technology in Eastern Germany

N. N. Zorev. *Vestnik Mash* 1958 Vol 38 (3) p 77 (Mar); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 400 (May) (Original in Russian)

X *C 12.0*

National and foreign machine tools in the technical fair at Leipzig, 1958. In- und auslaendische Werkzeugmaschinen auf der technischen Messe Leipzig 1958

L. Zwerger. *Fertigungstechnik* 1958 Vol 8 (7) pp 297-305 (July) (In German)

Several milling and boring machines are described, including an automatic model with several spindles. This is made by VEB Centex Leipzig, and can be used for HSS and sintered carbide. 26 illustr.

A *B 14.2 : C 6.0*

Swiss P 328,520 (Feb 23, 1955—conv date, USA) **W. Bader, R. W. Berry jun, Wesson Tool Co**

Cutting tool

Refers to a throwaway carbide bit in its holder, with several cutting edges. Fig 5 and 6 show views of the triangular bit 34 with its cutting edges A, B, and C in recessed part 40 clamped by plate 60 and screw 66 to holder 20. A change of position of the bit in the holder is very simple and readily executed, especially as the clamping plate 60 can be shifted relative to screw 66. (10 claims, 10 illustr).

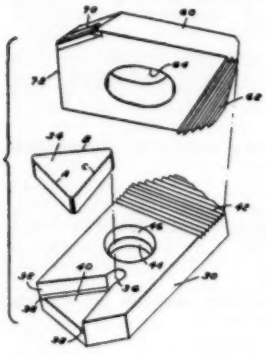

Fig 5 (left). Sectional view of bit in holder. Swiss P 328,520.

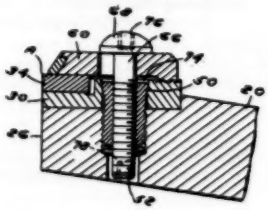

Fig 6 (below). Exploded view without holder. Swiss P 328,520.

(See also : *Diamond Tool Patents Ia,* published by the Ind Diamond Inf Bur).

J *C 12.01*

DAS 1,028,016 (July 1, 1952) **E. Reiber, Fortuna-Werke Spezialmaschinenfabrik AG**

Method of automatic control for operations in precision and finish machining of the surface of eg metal workpieces

The new method controls the machine in dependence on the surface roughness by the feeler of a surface tester which converts the results of the surface tests into impulses introduced into the control device of the machine which stops when the desired degree of surface finish is reached. The dimensional control is combined with the control of the surface finish by adjustment of the tester to a standard piece. Pneumatic or electrical testing methods are especially suitable as they do not affect the surface as a mechanical feeler does. (5 claims). Ref cited : GP 724,589 ; book by J. Perthen.

J *C 12.01*

CUTTING AND MACHINING OF GLASS

Question No 21. Suchfrage 21

Anon. *Glas-E-K-Technik* 1958 Vol 9 (5) p 200 (May) (In German)

In reply to a question about a grinding agent for optical lenses, diamond tools are recommended for precision and spectacle optics.

A *C 7.0*

Elastic properties of glass

E. K. Keller, E. I. Kozlovskaia. *Doklady Akad Nauk SSSR* 1957 Vol 116 (2) p 221 (Sep) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 358 (May) (Original in Russian)

X *C 2.22 : C 7.0*

Equipment for glass cutters

Anon. *Stroitel* 1958 (1) insert (Jan) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 485 (May) (Original in Russian)

X *C 7.0*

New work by A. L. Pope

Anon. *Ind Diamond Rev* 1958 Vol 18 (210) p 91 (May)

An example of diamond-point engraving on glass is illustrated. 1 illustr. *W* *C 10.0*

Stress relaxation in glass

A. Apati. *Epitoanyag* 1956 Vol 8 (10) pp 375-385 ; 1957 Vol 9 (1) pp 16-24 ; *Hungar Techn Abstr* 1958 Vol 10 (1) p 16 (Original in Hungarian)

X *C 7.0*

Universal glass cutting tool

Wilson Diamond Tool Co Ltd. *Ind Diamond Rev* 1958 Vol 18 (209) p 78 (Apr)

A new diamond tool for the glass cutting industry consists of a diamond head mounted on an extendible arm. This can be attached by means of a screw to a template of any shape up to a 26 in. square. The template should be ½ in. smaller all round than the shape of glass required. *W* *C 7.2*

Swiss P 328,361 (Nov 7, 1955) **P. Kramer, Artechnik SA**

Method of manufacturing a tool for scoring glass

A metal edge and a grinding wheel are connected to the poles of a transformer, *eg* in a standard AC circuit (220 V, 50 cycles) so that a 5 V current of 2 amps passes through edge and wheel. A wheel of the following composition : tungsten carbide 65%, tantalum carbide 16%, titanium carbide 8%, cobalt 4%, boric acid 3%, and resin 4% is suitable. The edge is applied to the water cooled wheel rotating at 450 rev/minute. Sparks are produced and carbide grains embedded in the edge of the cutter which can then be used *eg* for scoring medicinal ampoules. As the cutter is very cheap it can be thrown away when worn. (2 claims). *J* *C 7.01*

MACHINING OF STONE, ETC

Quarrying by on-site sawing

Anon. *Ind Diamond Rev* 1958 Vol 18 (211) pp 113-114 (June)

The use of a 2½ m diameter diamond saw in cutting slabs of rock directly from the quarry floor is described. The saw has 168 diamond segments, each of which is 25 mm long, 11 mm wide, and 11 mm deep. The saw is track-mounted. 4 illustr.

W *C 8.0*

A new circular stone saw for industry and research. Eine neue Gesteinskreissaege fuer Industrie und Forschung

G. Kneuper. *Glueckauf* 1958 Vol 94 (17/18) p 602 (Apr 26) (In German)

The Gesellschaft Deutscher Metallhuetten- und Bergleute has collaborated with the firm of W. Conrad, Clausthal-Zellerfeld, to produce a diamond-impregnated circular saw for cutting stone. Cutting depths of 40-400 mm are possible, and thin sheets from 0.25 mm thick can be cut. 1 illustr. *A* *C 8.0*

How to machine laminated plastics

T. R. Silk (Continental Diamond-Fibre Corp). *Iron Age* 1958 Vol 181 (19) pp 106-109 (May 8)

A survey of machining methods for use with laminated plastics. Tooling recommendations are given, together with advice on cutting speeds, coolants, etc. It is stated that diamond cut-off saws with a coolant are the best tool for cutting glass-base laminates. 5 illustr. *W* *C 8.71*

Resetting diamond saws

Trollope & Colls Ltd. *Mine & Quarry Engg* 1958 Vol 25 (3) p 130 (Mar)

Diamond masonry saws of 85 in. diameter are reset in 10 hrs by means of a single-shot riveter, and occasional sockets can be replaced with the wheel *in situ*. The resetting method is briefly described. *W* *C 8.0*

ROCK DRILLING

Pre-cementation in shaft sinking

Anon. *Optima* 1958 Vol 8 (2) pp 96-98 (June)

In preparation for pre-cementation, large diamond drills are used. The crowns are about 3 in. in diameter and the diamonds range from 8-20/carat. 3 illustr. *A* *C 9.0*

Experiments with crown drilling in the examination of deposits in ore mining. Erfahrungen mit Kernbohrungen zur Lagerstaettenuntersuchung im Erzbergbau

O. Arnold. *Montan-Runds* 1958 Vol 6 (4) p 85 (Apr)

Book, Vorschungsberichte des Wirtschafts- und Verkehrsministeriums Nordrhein-Westfalen. 1957 Nr 346, 25 pp, 4 illustr, Westdeutscher Verlag, Cologne & Opladen. Price : DM 8.30 (In German).

An important part of the work is devoted to a study of different types of diamond drill crowns, their uses, efficiency, and costs. [Book not in library of Ind Diamond Inf Bur]. *A* *C 9.0 : C 9.2*

Measuring abrasive bit wear

B. G. Fish. *Mine & Quarry Engg* 1958 Vol 25 (6) pp 264-267 (June)

Various methods used for the measurement of abrasive bit wear in full scale small-hole rock drilling experiments are described and compared. 5 illustr, 6 refs. *W* *C 9.0*

The use of large diameter drill holes in quarrying. II

A. Heidrich. *Mine & Quarry Engg* 1958 Vol 24 (2) pp 70-75 (Feb)

(Cont). German drilling machines and bits for large hole work are described, and their comparative suitability for different rock conditions is indicated. (To be cont). 8 illustr, 7 refs, 2 tables. *W* *C 9.0*

Sintered carbide in ore mining. Hartmetall im Erzbergbau

O. Klobassa. *Montan-Runds* 1958 Vol 6 (3) pp 43-47 (Mar) (In German)

For use in mining, sintered carbide must have a Co content of 6-13%. Increased Co content lessens the hardness but increases the flexibility. In ore mining it is used for drills and drill crowns. Composition and applications of the metal are discussed in detail. 4 illustr. *A* *C 9.22*

Information about carbides in mining. Einiges ueber die Hartmetalle im Bergbau

F. Koelbl. *Planseeber Pulvermetall* 1958 Vol 6 (1) pp 22-26 (Apr) (In German)

The type of carbide used is tungsten carbide with a cobalt content of 5-15%. Its use in boring tools for mining is discussed, with particular reference to hardness and toughness. 1 illustr, 11 ref. *A* *C 9.22*

Large oil well drilling bit to Venezuela

L. M. Van Moppes & Sons (Diamond Tools) Ltd. *Chem Engg & Min Rev* 1958 Vol 50 (6) p 41 (Mar 15)

What is believed to be the largest concave diamond oil well drilling bit ever made has been produced for use by the Shell Petroleum Co Ltd. Raw material used was 1 cwt of tungsten carbide powder, 6 cwt of alloy steel, 1 cwt of binder, and 1,200 ct of diamond. The 5,800 stones were individually set in a sintered tungsten carbide matrix, and fitted to an alloy steel threaded blank which was machined to a tolerance of 0.0005 in. The finished weight is about 225 lb, and the bit is designed to drill a 12¼ in. diameter hole through hard rock. *W* *C 9.0*

USP 2,818,233 (May 3, 1954) **E. B. Williams jun**
Drill bit

The bit is a core bit with a circular series of radial teeth, although its features may be adapted to diamond bits of other types where a drag cut is desired. The cutting elements are diamonds oriented in the material of the teeth, with the cutting points exposed at the radial edges of the teeth. The cutting edges are inclined upward and forward corresponding to the upward and forward sloping faces of the teeth, so that each diamond produces a circumferential drag cut on

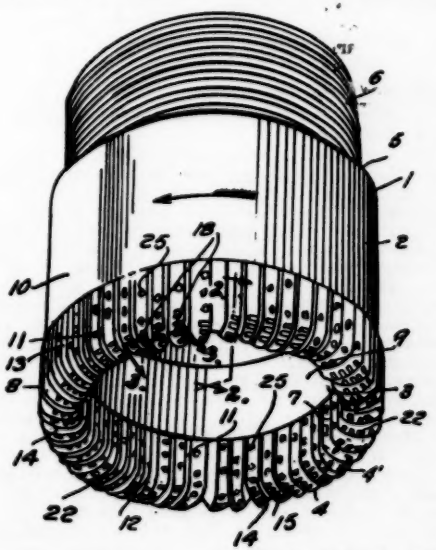

Fig 7 (above). Radial arrangement of the teeth. USP 2,818,233.

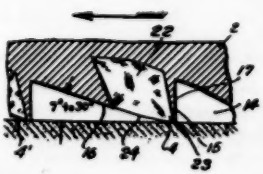

Fig 8 (left). Enlarged section of line 3-3 in Fig 7. USP 2,818,233.

the face of the formation, and not a gouge cut. Fig 7 and 8 show the radial arrangement of the diamond-studded teeth, and the setting of the diamonds in the circumferential direction of the cutting face of the bit along line 3-3 on Fig 7. A bit of this drag-cut type is said to eliminate destructive vibration when drilling certain kinds of hard rock. (4 claims, 5 illustr). Ref cited : 4 USP ; see 2,371,488 (for bedding diamonds in a row into the material of the teeth).

J *C 9.01*

DAS 1,025,807 (Sep 30, 1955) **A. Graefer, H. Nuesse, A. Pilgrim, Maschinenfabrik Nuesse & Graefer K-G**
Rotary rock drilling machine

The development of boring crowns, *eg* with diamonds as cutters, permits the drilling of holes of great length (over 300 ft) and large diameter (over 30 in.) in mines and tunnels. The rotary drilling is effected under high pressure of up to 25 tons, and requires a strong drill rod assembly. In addition, the removal of detritus and the cooling of the drill necessitates flushing with large quantities of water which means a heavy stress on the machines. With the progress of the work, new heavy rods have to be inserted which, after drilling the full length of the hole, have to be withdrawn and dis-assembled one by one. This machine is equipped with a chucking device and a holding device for use when changing the length of the rods ; it prevents rotation and axial movement by sets of faces on the drill rods and sleeves, and cooperating faces on the chucking devices, together with clamping jaws, so as to permit withdrawal and removal by counter-rotation. (4 claims, 7 illustr). Ref cited : DBP 850,881.

J *C 9.01*

WIRE DRAWING

Diamond dies for wire drawing

British Standards Institute, London W 1. *BS* 2946 : 1958, 12 pp. Price : 4s 0d

The Standard covers both reinforced and non-reinforced diamond dies, and therefore supersedes BS 1168—Diamond dies for wire drawing (non-reinforced), and BS 1393—Diamond dies for wire drawing (reinforced). It specifies the quality of the diamond, the mounting, casing, size tolerance, and marking of diamond dies for wire drawing. Briefly, it specifies that the die stones should be clear of defects, *eg* inclusions and fissures, unless they are well outside the working zone ; the profile of the bore is to be agreed between purchaser and manufacturer ; tolerance on the bore diameter shall have an upper limit of the nominal diameter, or 0.00005 in. (0.001 mm), whichever is the greater, below the nominal diameter ; mounting specifications are given for reinforced and non-reinforced dies ; casings shall be of steel, brass, or an alloy with a modulus of elasticity not less than 15×10^6 lb/sq in ; casing diameter of 1 ± 0.005 in., unless otherwise specified by the purchaser ; the bore of the diamond shall be co-axial with the casing ; the die shall be clearly marked with the manufacturer's trade mark or name, and serial number ; size to be stamped on the entrance side of the die which shall be indicated by a concentric circular groove.

Nomemclature and methods of examining diamond dies are explained. *W* *D 11.0*

Wire-drawing—a survey of current literature

E. Lindstrand. *Jernkont Ann* 1958 Vol 142 (3) pp 105-127 (In Swedish)

W *C 11.00*

Some experimental investigations on wire-drawing

C. O. von Hofsten, E. Lindstrand. *Jernkont Ann* 1958 Vol 142 (3) pp 128-164 (In Swedish ; abstr in English)

Experiments were performed on a wire drawing machine for dry drawing, with a range of 90-1,000 ft/minute. The investigation was principally concerned with the influence of different coatings on the drawing force and temperature. The optimum die angle and the properties of a rotating die were also studied. Temperature measurements proved to be a better method of assessing the effects of different coatings than was the measurement of drawing force. In drawing annealed wire of low and medium carbon content, the lowest temperatures were obtained when using a combination of sullcoat and borax. The optimum die angle proved to be about 14°. Rotation of the die appeared to have no influence on the drawing force as long as the speed of drawing : speed of rotation ratio was kept within reasonable limits. The only advantage of rotating dies that was confirmed was the fact that even oval dies were restored to round after being used for some time. 34 illustr.

W *C 11.0*

Sounds out wire flaws

Siemens & Halske. *Prod Eng* 1958 Vol 29 (24) pp 18-19 (June 16)

A new method of discovering physical discontinuities and defects in fine-gauge wire that goes into light bulbs and vacuum tubes. The fine gauge wire is power drawn across two wave guides at a steady rate, and ultrasonic waves cause vibrations to flow along it to a guide linked to a detector screen. If the pulse amplitude varies more than allowed by pre-set tolerances, the drive motor shuts down and, in some models of the test equipment, an audible signal sounds.

A *C 11.0 : D 15.0*

On B. N. Vorontsov, I. A. Panfilov's article ' Allowances for wear of thin wires '

Anon. *Izm Tekh* 1958 (1) p 86 (Jan/Feb) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 515 (May) (Original in Russian)

X *C 11.0*

Surface-stress tester for diamonds

Dr Heinrich Schneider, Bad Kreuznach, Germany. *Ind Diamond Rev* 1958 Vol 18 (211) p 118 (June)

A stress tester for checking diamonds for wire drawing dies is shown. The stones are mounted on a viewing stage and observed through a magnifying eyepiece. It operates on voltages of 220 AC or DC, but the voltage can be altered by a change of bulb. 1 illustr. *W* *C 4.0 : C 11.0*

GRINDING AND POLISHING OF HARD METALS

The grinding method in internal grinding. Der Schneidvorgang beim Innenschleifen

Anon. *Schliff & Scheibe* 1958 (1) pp 1-5 (In German)

The elementary facts concerning the actual grinding process, the material, surface finish, removal of unwanted substance, size of contact surface between wheel and workpiece, grinding speed, position of the machine, and measurement of the spindle are clearly set out, with a table to show which types of wheel are suitable for different workpieces. 2 illustr, 1 table.

A *C 5.0*

Lapping cycle automatic

Taft-Peirce Mfg Co, Woonsocket, RI. *Steel* 1958 Vol 142 (21) p 129 (May 26)

A 24 in. semi-automatic machine produces a flatness to less than 0.00011 in., and a surface finish of 1 micro-inch rms. The work cycle, including application of the lapping compound, is fully automatic. 1 illustr.

W *C 13.2*

The use of internal grinding wheels. Behandlung der Innenschleifscheiben

Anon. *Schliff & Scheibe* 1958 (1) pp 13-18 (In German)

The setting up and care of diamond internal grinding wheels are described briefly, and a table shows the correct wheel for different types of workpiece. 1 illustr.

A *C 5.0*

The grinding wheel. Die Schleifscheibe

Anon. *Aluminium* 1958 Vol 34 (2) p 116 (Feb) (In German)

Book, Beuth Vertrieb. 1957. Price : DM 4.50 (In German).

The most important points in choosing and using grinding tools, principally the wheel, are examined, and reasons for faults in grinding are given, together with ways of avoiding such faults.

A *D 8.0*

New developments at Basle

Anon. *Metalworking Prodn* 1958 Vol 102 (17) pp 741-743 (Apr 25)

The Studer high-precision surface grinder, type FH 450, especially suited to slot and lateral surface grinding, will produce a flatness within 0.00008 in. over an 18 in. length. Traverses are hydraulic, and criss-cross grinding by combined feeds is possible. Diamond and crush forming may be used for wheel dressing and truing operations. 7 illustr.

A *C 5.0*

Grinding milling cutters. Fraeser Schleifen

Anon. *Schliff & Scheibe* 1958 (2) pp 9-14 (In German)

The requirements of HSS milling cutters are described, and instructions are given for the choice of grinding wheel, the actual grinding operation, and dry grinding. The grinding instructions are given under separate headings for pointed, toothed, and form milling cutters. 7 illustr. *A* *C 12.21*

From the manufacturers. Aus den Betrieben

Anon. *Maschwelt & Elektrotechnik* 1958 Vol 13 (11/12) pp 245-246 (June) (In German)

Different types of grinding and cutting machines are described, amongst which is a new centreless grinder by the Cincinnati Milling & Grinding Machine Co Inc. The principal feature of this is the Filmatic spindle bearing system. Micrometrical adjustment is provided for the diamond tool. 5 illustr.

A *C 5.0 : C 12.0*

Abrasive wheel sales ebb

Anon. *Steel* 1958 Vol 142 (4) pp 47-48 (Jan 27)

In a forecast for 1958 grinding wheel sales, it is stated that a $4m reduction in sales can be expected. The Carborundum Co's bonded abrasives division is concentrating largely on the application of man-made industrial diamonds for grinding wheels. 1 illustr.

W *C 1.4 : D 8.0*

Device for testing small abrasive disks

M. I. Babchinitser. *Med prom* 1957 Vol 11 (12) pp 46-48 (Dec) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 487 (May) (Original in Russian)

X *C 4.0*

Customary grinding wheel shapes. Gebraeuchliche Scheibenformen

Anon. *Schliff & Scheibe* 1958 (2) pp 5-8 (In German)

Seven different shapes of grinding wheel are discussed and recommended for their appropriate tasks. 6 illustr, 2 tables. *A* *C 5.0*

The Baker-Pera tool grinding attachment

C. Baker of Holborn Ltd. *Ind Diamond Rev* 1958 Vol 18 (209) pp 66-67 (Apr)

The tool grinding attachment is designed to simplify the accurate setting of cutting tools for regrinding. A microscope is incorporated to aid accurate positioning. The capacity of the attachment permits tools with 1¼ in. square shanks to be accommodated, and a small tool auxiliary carrier takes tool shanks up to ¼ in. square. 1 illustr. *W* *C 12.21*

Grinds large saws

Drake Corp, 3231 Sutton Ave, St Louis 17, Mo. *Steel* 1958 Vol 142 (25) p 118 (June 23)

The ST-12 universal tool grinder can sharpen tungsten carbide-tipped circular saws of 6-60 in. diameters. Two models are available : one for angular tooth work and the other for profile grinding. 1 illustr.

W *C 12.21*

Chromic oxide for metallographic polishing

M. T. Hopkin (Nat Phys Lab). *Iron & Steel Inst Journ* 1958 Vol 188 (4) p 350 (Apr)

Letter to the Editor.

An improved method of preparing chromic oxide for use after rough polishing by diamond or alumina is described. *W* *C 8.6*

Bench-grinding and lapping machine and spark erosion machining equipment

Impregnated Diamond Products Ltd, Gloucester. *Ind Diamond Rev* 1958 Vol 18 (209) pp 77-78 (Apr)

Brief descriptions are given of the Wickman-Neven GF/O oscillating grinding and lapping machine, and the Sparcard metal deposition equipment.

W *C 12.9*

At the Moscow Internal-Grinding-Machine plant

Yu. L. Markiz. *Mashinostroitel* 1958 (3) p 42 (Mar) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 5.0*

Grinding precision hobbing cutters

B. A. Pogodin, M. E. Barskii. *Mashinostroitel* 1958 (3) p 7 (Mar) ; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 399 (May) (Original in Russian)

X *C 5.0*

Fine grind cuts tool costs

Ryan Aeronautical Co. *Steel* 1958 Vol 142 (22) p 72 (June 2)

The Ryan Aeronautical Co has cut by two-thirds the time spent on maintaining tools. The introduction of diamond-assisted electrolytic grinding increased wheel life by a factor of 10, and reduced rejects to nil. The method is to be used on throwaway carbide tips : Ryan consider that they can be reground at an eighth of the cost of replacement. 2 illustr.

W *C 12.9*

LITERATURE REQUESTS

When applying for the loan of literature abstracted in this journal, please quote the title of the article, the name of the author, and the number of the page on which it appeared.

The determination of chip thickness in grinding. Beitrag zur Bestimmung der Spandicke beim Schleifen

J. Peklenik. *Ind Anzeig* 1958 Vol 80 (55) pp 829-832 (July 11) (In German)

A formula for the thickness of chips produced is worked out on the basis of an examination of the effective grain pattern. The normal chip size is defined by the geometric and kinematic conditions, as well as through the construction of the grinding wheel and its elastic behaviour during the grinding process. Experiments have shown that the grain structure influences the chip size. 11 illustr, 14 ref.

A *C 5.0*

Lapping simplified

Spitfire Tool & Machine Co, 2931 N Pulaski Rd, Chicago 41, Ill. *Steel* 1958 Vol 142 (18) p 112 (May 5)

A semi-automatic bench model flat lapping machine features a 9 in. close-grained cast iron alloy lapping plate which can easily be replaced by a plate of different diamond charge. Tolerances of 0.0000116 in. are readily achieved. 1 illustr.

W *C 13.2*

A few aspects of the chemical reactions occurring during the use of abrasives

V. Satta. *La Ceramica* 1956 (12) (Dec); *Ind Diamond Rev* 1958 Vol 18 (210) pp 94-95, 99 (May) (Original in Italian)

Abr of paper to the 4th National Congress of the Italian Mechanical Assoc, Turin, Oct 9, 1956.

W *C 2.3 : D 14.1*

Grinding to a fine finish

Taylor Hobson. *New Scientist* 1958 Vol 3 (75) pp 21-22 (Apr 24)

An autosizing unit with an accuracy of 0.0001 in. occupies roughly the same space as two radio sets and does not require an elaborate computing system. It is primarily intended for grinding cylindrical parts, but it can be adapted for the production of splines and other shapes. The operating procedure is briefly described. *W* *C 5.0*

New theory bolsters grinding research

P. M. Unterweiser. *Iron Age* Vol 180 (11) pp 127-129 (Sep 12)

The work of Prof K. Sato, of Tohoku Univ, Japan, on the measurement of grinding point temperature is described. Basically, Prof Sato's method involves the measurement of the heat generated in grinding by (*i*) the tangential grinding force, and (*ii*) the ratios of heat distribution to the work, the chips, and the grinding wheel. 5 illustr. *W* *C 12.5*

Automatic tool grinder

United Tool Co, 303 UB Bldg, Huntington, Ind. *Steel* 1958 Vol 142 (11) p 124 (Mar 17)

The Contour-O-Matic is an automatic grinder for duplicating a given form on single-point brazed or solid carbide cutting tools. Both rough and finish grinds are performed in the same set-up. An attendant is required to load and unload the tools.

W *C 12.21*

Swiss P 328,534 (Aug 24, 1953) **L. O. Carlsen, E. D. Dammert, Gleason Works**

Machine for grinding cutting tools, in particular milling cutters

The grinding wheel carrier is mounted for oscillation on a turret angularly adjustable on the base around a pivot, the axis of which is perpendicular to the axis of oscillation. The machine is equipped with a diamond truing device shown in Fig 9 and 10. Diamond D sweeps over the wheel face along line 224 around

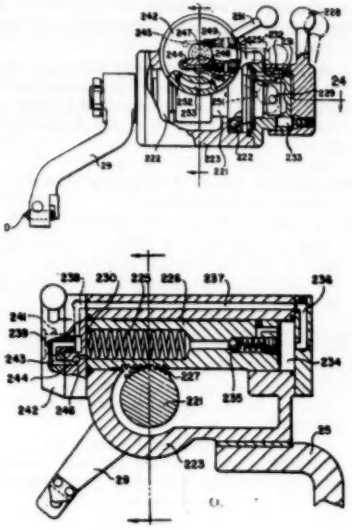

Fig 9 (top) and 10. Two aspects of the diamond truing device. Swiss P 328,534.

spindle 221 [See Fig 2, *Ind Diamond Abstr* 1958 Vol 15 p A75 (May)]. The line lies in a plane approximately perpendicular to the grinding wheel at a point in the middle of the working face of the wheel, which means that the wheel is imparted an almost exact conical shape. The movement of the lever 29 carrying the diamond to the right is effected by a helical compression spring 225 initiated by the operator by moving handle 228 into the position shown in dash-dotted lines in Fig 9. The speed of the diamond across the wheel face is controlled by a dash-pot device 230-246. (14 claims, 24 illustr). *J* *C 5.01*

DAS 1,028,459 (Dec 10, 1953) **E. Koch, Jung Schleifmaschinen H. Gaub**

Feeding device for machine tools, in particular for internal grinders

The feeding devices, a mechanical one and a hydraulic one, each permitting coarse and fine adjustment, are so connected by a lever system that *eg* the mechanical device effects a swinging movement of the lever while the hydraulic device varies the position of the fulcrum of the lever system. The usual sequence of operations is: rough grinding, wheel truing, finish grinding. Feeding is automatic by the hydraulic device for rough and finish grinding, while the mechanical feeding device is used for the truing operation. (4 claims, 4 illustr). Ref cited: 2 GP; 1 DBP; 3 USP.

J *C 5.01*

DAS 1,028,794 (Dec 18, 1956) **K. A. Egerer, H. Mueller, Standard Apparate-Fabrik GmbH**

Method of making interlayers of exact thickness for the gap in magnetic heads

The basic idea is the exact dimensioning of the distance between a datum face on the magnet and the magnet face to which the interlayer is to be applied. This is achieved by a grinding operation. The interlayer is then applied, its thickness being greater at the point of least thickness than desired, so that the final dimensions can be obtained by a second grinding or honing operation. The operation is preferably carried out by an oscillating movement using a diamond dust. (6 claims, 8 illustr). *J* *C 12.01*

NEW MACHINING METHODS

The working of sintered carbide by spark erosion. Hartmetallbearbeitung durch funkenerosives Senken

K. Ganser. *Ind Anzeig* 1958 Vol 80 (47) pp 677-680 (June) (In German)

The materials suitable for working carbide in this way are discussed, and it is found that although this method of treatment is very efficient for carbide, different materials must be used from those used on HSS. 8 illustr, 12 refs.

A *C 12.9*

Slice and electrogrind honeycomb for B-52 panels

W. Koehler. *Am Machinist* 1958 Vol 102 (12) pp 93-95 (June 16)

A method of building honeycomb and the milling and electrolytic machining are described. A No 5 Cincinnati vertical miller was used for experiments, but the special Onsrud gantry miller with tracer controls and a 6 × 15 ft table is frequently used. Stainless steel cores, being more difficult to cut, are machined with an electrolytic machine. The 5 hp Standard Electric isolated spindle grinder head is shown operating on a Rockford hydraulic openside planer, the 6 in. metal-bonded diamond wheel being surrounded by a plastic shield which controls the flow of salt solution. 8 illustr.

A *C 12.9*

Experiments in the field of electrolytic grinding

P. Landberg, J. L. Remmerswaal. *Metallinst Publ* 50, 1957, 9 pp (July); abstr *Iron & Steel Inst Journ* 1958 Vol 188 (2) p 189 (Feb)

The grinding of WC with Ni-bonded diamond wheels is more rapid than with ordinary diamond grinding, but surface finishes are not as good. Surface finish improves with decreasing current.

W *C 12.9*

Ultrasonics and precision machining. Ultraschall und Feinbearbeitung

W. Lehfeldt. *Ind Anzeig* 1958 Vol 80 (10) pp 129-132 (Feb 4) (In German)

The application of ultrasonic instruments in all fields of surface treatment, including the boring of hard dubstances such as sintered carbide and diamond, is described.

A *C 12.9*

The formation of tool electrodes for spark erosion. Gestaltung der Werkzeugelektroden fuer die funken-erosive Gesenkherstellung

H. Obrig. *Ind Anzeig* 1958 Vol 80 (47) pp 685-688 (June) (In German)

Various materials are compared and the 'undersize' of the tool electrode required for spark erosive sinking is discussed. For large-scale engraving, copper is the best working material. 12 illustr, 6 refs, 1 table.

A *C 12.9*

Paul Langevin's works on piezoelectricity and ultrasonics

O. A. Starosel'skaia-Nikitina. *Trudy Ist Fiz-Matematic Nauk* 1957 Vol 19 p 170; *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 359 (May) (Original in Russian)

X *C 2.25 : C 2.27*

Machining hard alloys by current conducting abrasives

I. K. Trushin. *Vestnik Mash* 1958 Vol 38 (2) p 51 (Feb); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (5) p 400 (May) (Original in Russian)

X *C 12.9*

USP 2,818,491 (July 13, 1955) **V. E. Matulaitis, Elox Corp of Michigan**

Electrode wear compensation

The development of grinding processes using spark-machining principles has been hampered by the difficulty of maintaining uniformity in size and finish because of electrode wear, *ie* the wear of the brass grinding wheel. The difficulty is overcome by installing an electrical sensing device which signals the size of the gap developing through wear of the wheel to an electronic device which immediately causes rotation of a motor for adjusting the position of the electrode. When the electrode, *ie* the grinding wheel, has moved a sufficient distance to restore the preset conditions of the circuits when grinding was started, rotation ceases. In actual operation, the corrective function takes place progressively and continuously rather than in steps. The device may be used for grinding, planing, milling, for contour milling, and for form-grinding. (15 claims, 3 illustr). Ref cited: 4 USP; 3 FP. See also: USP 2,769,078 and 2,588,744 (for power and feed circuits).

J *C 12.01*

POWDER TECHNOLOGY

Measuring powder surfaces

B. Deryagin (Soviet Institute of Phys Chem). *New Scientist* 1958 Vol 3 (76) p 31 (May 1)

A new development entails the passing of air at very low temperatures through the powders or porous materials contained in a special metal tube. The air is so rarified that its molecules cease to collide with each other. The smaller the particle, the more winding the path and the longer the distance which the gas molecules have to travel, and, therefore the greater the difference in air pressure between the ends of the tube. This is measured very accurately and gives the basis of deducing the specific surface of the material. The measurements take one hour, as compared with a day by other methods.

W *D 7.5*

DIAMOND TOOL PRODUCTION AND DIAMOND RECOVERY

Surface tension of the binding metals of sintered carbide alloys. Beitrag zur Oberflaechenspannung der Bindemetalle von Hartmetallegierungen

H. J. Booss. *Planseeber fuer Pulvermet* 1958 Vol 6 (1) pp 17-20 (Apr) (In German)

From experiments conducted it was concluded that the following equation applies to the surface tension of sintered carbide alloys: γ Co > γ Ni < γ Fe. Tungsten carbide lowers the surface tension of cobalt if added. Absolute measurements of the surface tension of iron, nickel, and cobalt should not be made in a hydrogen atmosphere. The sintering of cermets on the basis Al_2O_3/Me (in which Me = Fe, Ni, Co) should not be carried out in hydrogen, because the wettability of the oxide is reduced. 23 ref, 2 tables.

A *D 13.5*

The diamond angle

Anon. *Am Machinist* 1958 Vol 102 (12) p 121 (June 16)

Diamonds give better life if set in the tool so that the hardest vectors lie along the edges of the crystal, while the softest are at 90° to any edge. Clipper Diamond Tool Co has installed x-ray equipment to facilitate exact sawing and cleavage.

A *C 1.61 : D 2.0*

More on hack saws

Anon. *Mineralogist* 1958 Vol 26 (6/8) p 178 (June-July-Aug)

Akio Ujihard is continuing his experiments with the diamond charged hack saw, and has found that the strike of the saw should be at least two inches. As narrow a blade as possible, with the necessary rigidity, gives the best results, and it may be perforated to reduce friction binding. A 1 in. wide blade of 18 gauge is in use at present for experiments.

A *C 8.0*

Suction of dust from grinding machines. Staubabsaugung an Schleifmaschinen

B. Huljas. *Giesserei* 1958 Vol 45 (6) p 142 (Mar) (In German)

The British Steel Castings Research Association has produced a grinding machine equipped with a vacuum tube which sucks away the dust, formed during grinding, through holes and slits in the platform on which the workpiece is placed. 2 illustr.

A *D 7.6*

Fixing diamonds in tool shanks. Befestigung von Diamanten in Werkzeugschaeften

Gen Electr Co. *Technica* 1958 Vol 7 (13) p 762 (June 20) (In German)

A method of fixing diamonds in tool tips is described which gives better protection of both corners and faces of the diamond, and which permits the use of much smaller stones than usual. The diamond is set on the shank in titanium-hydride, and soldered to this substance by means of a silver solder. The soldering takes place either in a vacuum oven or in a very pure argon atmosphere. By this method the adhesive strength can take a cutting pressure of some 3,500 kg/sq cm. 2 illustr. *A* *D 13.2*

Extraction of diamond dust for [sic] industrial wastes

G. F. Shvetsov. *Tsvetnye Matally* 1958 Vol 31 (1) p 87 (Jan); *Library of Congress Mthly List Russ Access* 1958 Vol 11 (2) p 404 (May) (Original in Russian)

X *D 7.6*

DAS 1,027,883 (June 20, 1952) **H. R. Montgomery, Deutsche Norton GmbH**

Sintered hard alloys and method for their manufacture

The alloys based on boron carbide are characterized by containing 10-50% (by volume) of TiB_2, CrB_2, ZrB_2, Mo_2B_5, HfB_2, TaB_2, or W_2B_5, or by a mixture of two or more of these compounds. Up to 80% (by weight) is B_4C, not more than 6% (by weight) free boron and carbon not bonded to B_4C, but not more than 2% free carbon, the remainder being impurities derived from the starting materials. Four per cent (by weight) of metal borides may be replaced by corresponding carbides. The alloys are produced from mixtures of boron carbide with one or more of the metals mentioned above under mechanical pressure of at least 70 kg/cm^2 at a temperature of at least 1,900 deg Centigrade. They are suitable for the manufacture of drawing dies, gauge points and blocks, sanding nozzles, truing devices, etc. (2 claims). Ref cited: 2 GP; 2 Austrian P. *J* *D 13.0*

MISCELLANEOUS

Carbide Engineering, annual diamond issue

Hitchcock Publ Co, 222 E Willow Ave, Wheaton, Ill. *Carbide Engg* 1958 Vol 10 (6) (June)

The whole of the issue is devoted to the uses of diamond tools. The principal articles are: Contour grinding carbide die parts, by W. J. Knuff; Cemented [sintered] diamond cutting tools, by C. B. Slawson and R. M. Denning; Reduce your brazed tool maintenance cost by 40%; 'Dressing' a diamond wheel, by S. Dymek; Finishing carbide dies for cold extrusion production by W. B. Panko; and When should you throw away your throwaway inserts. The articles describe the diamond tooling required for the various operations.

A useful directory lists products for machining, grinding, and finishing sintered carbides. The new tools section describes several machines which operate with diamond tools and wheels, and a considerable number of publications of use to the industrial diamond user are listed and described in the trade literature section.

American reluctance to exploit synthetic diamonds is briefly mentioned, and a short note appears on the Clipper Diamond Tool Co's use of orientation methods in manufacturing diamond tools.

W *C 5.0 : C 12.0 : D 11.0*

Progress in mineral dressing: Transactions of the International Mineral Dressing Congress

Book, Almqvist & Wiksell Import & Export Dept, 26 Gamla Brogatan, Stockholm C, Sweden. 1958, 750 pp, 320 illustr, index. Price: Swedish Kr 95.-

The Congress was held in Stockholm from Sep 18-21, 1957. Thirty-four papers appear in full in the book, together with 130 contributions to the discussions held during the technical sessions. The papers are extremely comprehensive, and the book should be of considerable use to the modern metallurgist. [Book not in library of Ind Diamond Inf Bur].

W *C 1.3*

The Stockholm Mineral Dressing Congress. I-IV

Anon. *Mine & Quarry Engg* 1958 Vol 24 (1) pp 30-34 (Jan); (2) pp 61-69 (Feb); (3) pp 111-119 (Mar); (4) pp 158-163 (Apr)

Abstracts of the papers presented at the Stockholm Mineral Dressing Congress. 17 illustr.

W *C 9.0*

1957 IDR REPRINTS

The following articles, which appeared in *Industrial Diamond Review* during 1957, are now available, price 1s—post free, from Industrial Diamond Review, 2 Charterhouse Street, London EC 1:

I 243—The reclamation of diamond powder from industrial wastes, by J. Abel.
I 244—Faster carbide grinding with metal-bonded diamond wheels, by J. W. Ripple.
I 245—The impact testing of hard metals, by W. Spaeth.
I 246—Production of sinter alumina cutting tools, by F. Singer and S. S. Singer.
I 247—Mechanized production of instrument jewels, by R. Humphrey and R. E. Leeds.
I 248—The selection of diamonds for industrial purposes, by G. P. Freeman.
I 249—Industrial diamonds from Panna, India, by S. M. Mathur.

PUBLICATIONS RECEIVED

BOOK REVIEW

The truing of grinding wheels with diamond—Research reports of the Ministry of Economics and Commerce in North Rhine-Westphalia. Das Abrichten von Schleifscheiben mit Diamanten—Forschungsberichte des Wirtschafts- und Verkehrsministeriums Nordrhein-Westfalen

H. Opitz, K. E. Schwartz. Westdeutscher Verlag, Cologne and Opladen. 1958, 58 pp, illustr, tables. Price : DM 17.15 (In German)

Printed in mimeographed form, this report gives detailed information on all aspects of truing with diamond. In this case, an external cylindrical grinder was used, but the results of the experiments apply to all truing processes. The aim of the experiments was not only to find out about the best results obtainable by truing, but also to study the wear of the diamond tool, and discover the most economical way of using these tools.

After the introduction, in which there is a brief outline of the properties of the diamond, and the description of the experiment, there are three main chapters. The first one, on the cutting process in truing, considers the grinding grooves and surface finish produced, the cutting power, wear of diamond, and a description of the cutting process in truing. The second one, on the influence of the truing conditions on grinding, gives information about the depth of roughness on the workpiece, the amount of substance removed in the process, the grinding power, and wear of the wheel. The third deals with fine measurement. A useful list of signs and abbreviations and their meanings is included at the end, as well as a bibliographical list and diagrams of surface finishes.

A *C 5.0*

TRADE LITERATURE

TRADE LITERATURE HOLDINGS

Readers are requested to note that trade literature reviewed in this journal is not available for loan, nor is it displayed in the Information Bureau's Library. Readers wishing to obtain copies of the catalogues are requested to apply to the address which appears immediately under the title of the review.

Manual of instruction for the use and upkeep of diamond-impregnated grinding wheels. Manuel d'emploi et d'entretien des meules diamantées

Outillage Eskenazi SA, Carouge-Genève, Switzerland. 23 pp, 6½ × 9½ in., illustr. (In French)

The bonding, concentration, and mesh of diamond-impregnations are discussed. Brief details concerning the mounting of the wheels are made clear by photographs. Tables show the types of work, tool, and working method best suited to each other, and also the most suitable speeds for different wheel sizes. Some 30 shapes of wheel available are illustrated.

A *D 8.0*

The Diprofil

Engis Ltd, Hyprez Division, Gabriel's Hill, Maidstone, Kent. 8 pp, 8 × 11 in., illustr

The Diprofil machine is driven by a flexible shaft from an electric motor, and provides a self-actuating tool for handworking operations. The transfer of the reciprocating action from the hand to the unit eliminates the fatigue and physical strain of conventional handworking operations, and, being extremely light in weight, free from vibration, and under finger tip control, the Diprofil machine enables such work as filing, lapping, scraping, and honing to be carried out with greater speed and sensitivity.

The unit weighs 1 lb and is made so that it can be conveniently held in one hand. The speed of reciprocation can be varied from 0-120 strokes/sec, and the stroke from 0-6 mm (0.236 in). The balance of the unit is automatically compensated for different strokes and speeds.

Diamond-impregnated and tungsten carbide files are provided for working hardened steels, minerals, ceramics, and glass, whilst steel files can be used on soft materials. Files can be readily interchanged with scrapers, hones, laps, and saws, and the tool can be left free to rotate about its longitudinal axis so that it can adjust itself to the working surface, or be locked in position when required. The provision of tool holders and extension arms enables intricate work to be carried out on complex tools. A lathe attachment, included in the standard equipment, enables the unit to be rigidly held in the tool post or tailstock.

Straight and angled handpieces are provided for use with diamond profile grinding wheels, miniature tungsten carbide cutters, and polishing disks, thus enabling grinding, polishing, milling, and engraving to be carried out rapidly and efficiently in places normally inaccessible.

W *C 5.0*

Diamond tools

J. K. Smit & Sons (Diamond Tools) Ltd, 22-24 Ely Place, London EC 1. 58 pp, 8¼ × 11¼ in., illustr

This is an exceptionally useful publication for both workshop and management levels. Basically it is a catalogue which illustrates and describes the wide range of diamond tools manufactured by Smit's, but it also includes advice on the use of many of the tools depicted.

The first section covers boring and turning tools, and gives examples of materials and types of work for which diamond is best suited. Diagrams illustrate the geometry of typical tools. Following sections deal more briefly with wheel forming diamonds for thread grinding, radius and form truing tools, midget points, engraving tools, gramophone styli, pencil point tools, glass tools, diamond styli (other than for gramophones), pantograph points, hardness indenters, and grooving tools. Most of the above tools can be relapped and re-set by a special service operated by the manufacturers.

The largest section of the booklet is devoted to diamond truing and dressing tools for diamond wheels. Theoretical notes on diamond are presented, together with a diamond tool size selection chart. Several pages of advice on the truing and dressing of diamond wheels with diamond tools are followed by a section on form truers and blade truers. Several pages showing diagrams of truing and dressing tools are appended, and the catalogue concludes with sections on diamond drills and diamond powders.

W *C 3.22 : C 4.0 : C 5.0 : C 6.0 : C 7.0 C 10.0 : C 12.0*

Stedall Machine Tool Company, Section G : Grinding and Polishing Machines

Stedall Machine Tool Co, 145-157 St John Street, London, EC 1. 82 pp, 8½ × 11 in., illustr

A selection of machines made by a variety of manufacturers is covered in this part of the Stedall sectional catalogues. The range includes carbide and HSS grinders, carbide tool grinders, centreless grinders, surface grinders, twist drill grinders, et cetera. Each machine is illustrated and described in detail, and tables showing specifications are given. Among the machines covered are the following :

(*i*) The Lindner Gus worm and thread grinder, available in four models. Diamond truing devices are provided.

(*ii*) The GL2 and GL4 thread grinders, also made by Lindner, have automatic truing devices which use rough diamonds. Both use 20 in. diameter wheels, and the distance between points on the GL2 is 80 in., and on the GL4 it is 160 inches.

(*iii*) The Stedall carbide tool grinder has two diamond wheels : one medium and one fine mesh. The moving table preserves the diamond wheels from uneven wear.

(*iv*) Wright patent table surface grinders are designed for both roughing and finishing operations. The 8 and 10 in. machines incorporate a fan and dust bag, whilst larger models feature motorized dust collectors. The grinding wheels are dressed and trued by a separate diamond truing attachment.

W *C 5.0 : C 12.0*

Care of diamond tools

J. K. Smit & Sons Ltd, 22-24 Ely Place, London EC 1. 40 pp, 5 × 7 in., illustr

As one of the principal manufacturers of diamond tools, Smit's are in a good position to give advice on the care of the tools. The information contained in this booklet is calculated to extend diamond life by obviating methods of use which might damage the diamond. The most common uses of diamond tools, *eg* wheel truing, are dealt with, but the information presented is of interest to all users of industrial diamonds. *W* *C 1.6*

CDP wheel dressing tools

Diamond & Boart Products (Aust) Pty Ltd, 14-16 Parramatta Road, Stanmore, Australia

This is an introductory brochure issued on the appointment of Diamond & Boart Products as representatives of the Koebel CDP (cemented diamond particle) range of wheel dressing tools. The CDP principle is explained [See *Ind Diamond Rev* 1956 Vol 16 pp 125-128 (June)] and several tools from the range available are illustrated. *W* *C 5.0*

Collected catalogues [Cleveland indicating equipment]

Cleveland Instrument Co, 735 Carnegie Av, Cleveland 15, Ohio.

The catalogues cover the following selection of instruments : the Indi-AC portable dimensional gauge, with an ¼ in. diameter carbide tip, and a range of 0.000010-0.010 in. ; the Par-AC electronic production gauge which utilizes an ¼ in. radius diamond to measure over a range of 0.000010-0.010 in. ; the Micro-AC electronic microcomparator, which also uses an ¼ in. radius diamond, but which has a finer range of 0.0000010-0.00040 in. ; and the Ex-AC rotary indicator for measuring work position, hole concentricity, etc, on jig borers, jig grinders, and many other machine tools with a rotating spindle. It employs an ⅛ in. diameter carbide ball, and measures from below 0.000010-0.010 in. A variety of accessories is available, together with a stiff card, for display near instruments, which details sources of measurement error.

W *D 15.0*

Collected catalogues [Optibel SA]

Optibel SA, 150-160 Rue Jolly, Bruxelles 1, Belgium. 8 pp, 5¼ × 10¼ in., illustr. (In French, German, and English)

Brief descriptions are given of various milling and polishing machines, of an automatic lapping machine for work on the wheel and bobbin systems, and of a roughing machine for cylindrical and spherical convex surfaces using a diamond tool.

A *C 7.0*

Diamond-impregnated tools and drilling crowns for the oil industry. Couronnes de sondage et outils à concrétion diamantée pour l'industrie du pétrole

Diamant Boart SA, 74 Ave du Pont de Luttre, Forest-Bruxelles, Belgium. 4 pp, 8¼ × 12¾ in., illustr. (In French)

Diamant Boart drilling crowns are made in every size up to 12 in., with a selection of threads for various core barrels. The other tools listed include saws and grinding wheels. *A* *C 9.21*

Who originated the impregnated blade ? Qui a réalisé la lame d'armure ?

Diamant Boart SA, 74 Ave du Pont de Luttre, Forest-Bruxelles, Belgium. 2 pp, 8¼ × 10¾ in., illustr. (In French)

As a result of research and experiments carried out since 1938, Diamant Boart have produced a new diamond-impregnated saw for cutting through large blocks of stone ; it requires only a simple water coolant and no surveillance once it has been set in motion.

A *C 8.0*

PATENT LISTS

BRITISH

The Official Journal (Patents) 1958 (3616) (June 4)

798,818 GENERAL ELECTRIC CO LTD. Apparatus for manufacturing synthetic jewels.

The Official Journal (Patents) 1958 (3617) (June 11)

799,485 AMERICAN VISCOSE CORP. Abrasive wheel.

799,498 H. FERNANDEZ-MORAN. Method of polishing a cutting edge of a diamond for a cutting tool.

UNITED STATES

Official Gazette 1958 Vol 730 (1-4) (May)

2,833,048 E. J. TELGMANN, CANADIAN SIZE CONTROL CO LTD. Plug gauges having glass gauging surfaces.

2,833,089 A. F. BEAULOYE, H. BEAULOYE jun, M. BEAULOYE. Engine cylinder block and head gasket surface grinding apparatus.

2,833,090 R. TOUVAY, SA DES MANUFACTURES DES GLACES & PRODUITS CHIMIQUES DE ST GOBAIN, CHAUNEY & CIREY. Apparatus for grinding or polishing flat glass.

2,833,092 J. HAMAI. Apparatus for sharpening small drills.

2,833,520 R. G. OWEN. Annular mill for use in oil wells.

2,833,638 R. G. OWEN, SERVCO MFG CORP. Hard facing material and method of making.

2,834,156 W. C. OBERLIN, PITTSBURGH PLATE GLASS CO. Cutting machine.

2,834,158 L. A. PETERMANN, GULTON IND INC. Ultrasonic drill.

2,834,159 O. E. HILL, NORTON CO. Centreless grinding machine.

2,834,160 G. E. LILLIE, BRYANT CHUCKING GRINDER CO. Grinding machine.

2,834,202 E. D. COOK, GENERAL ELECTRIC CO. Apparatus for measuring hardness.

2,834,203 E. S. SAMPSON, GENERAL ELECTRIC CO. Apparatus for measuring hardness.

2,834,231 J. T. GRUETZNER. Three-dimensional optical die making method and device.

2,834,333 J. LOECY jun. Turning device for diamond tool.

2,834,651 E. G. GRAY. Process for the production of boron carbide.

2,835,024 D. E. GOMMEL, BORG-WARNER CORP. Saw.

2,835,127 R. C. SCOTT. Hardness tester.

2,835,784 E. M. WILLIAMS, FIRTH STERLING INC. Spark machining apparatus.

2,835,785 E. M. WILLIAMS, FIRTH STERLING INC. Apparatus for spark machining.

2,836,014 T. E. CALDERWOOD, W. E. SYKES LTD. Machines for grinding gear tooth and like profiles.

2,836,015 A. R. STONE. Cut-off machine.

2,836,017 R. L. TYGH. Insert for grinding wheels.

2,836,240 A. NUDING, GENERAL MACHINE CO INC. Cut-off tool.

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Official Journal 1958 Vol 11 (17-20) (Apr-May)

Complete Specifications Accepted

2860/56 J. G. GLASSFORD, HARD METALS LTD. Grinding apparatus.

AUSTRALIAN

Official Journal 1958 Vol 28 (12-14) (Apr)

213,925 S. KRYSZEK. Machine tool and tips therefor.

213,943 MINNESOTA MINING & MFG CO. Centrifugally moulded grinding wheel.

213,954 MINNESOTA MINING & MFG CO. Abrasive article.

214,152 SOC D'ELECTRO-CHIMIE, D'ELECTRO-METALLURGIE, & DES ACIERIES ELECTRIQUES D'UGINE. Electrodes for spark machining.

214,221 EDIBRAC LTD. Cutting tool.

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Patentliste 1958 (8-9) (Apr-May)

329,417 S. G. JOHNSON, JOHNSON GAGE DEVELOPMENT CO. Apparatus for measuring internal surfaces.

329,425 L. TSCHIRF, F. GAERTNER. Device for testing the hardness of workpieces on their interior faces.

329,465 E. J. FRIEDLINE, KENNAMETAL INC. Cutting tool.

329,807 F. LEIMENSTOLL, KIENZLE UHREN-FABRIKEN AG. Bearing device for parts of watch movements.

329,808 ETA AG, EBAUCHES-FABRIK. Ball bearing.

329,810 FABRIQUE D'HORLOGERIE CHS FISSOT & FILS SA. Bearing and method for its manufacture.

329,825 N. MIRONOFF, ATELIERS DES CHARMILLES SA. Machine for machining an electrically conductive workpiece by means of electric sparks.

FRENCH

Bulletin Officiel 1958 Vol 75 (3859-60 - 2nd suppl); (3864-67) (Apr-May-June)

1,161,304 A. CORBIN. Method for cutting stone in subterranean quarries, and machine for carrying out the method.

1,161,381 R. PANHOFER. Grinding apparatus for grinding blocks, billets, sheets, and the like.

1,162,932 L. J. POICHETTE. Cutting disks.

1,163,543 ETABLISSEMENTS BENETIERE. Apparatus for polishing hard materials and method of use.

1,163,812 SOC DES USINES DE LOUIS DE ROLL SA. Grinding device for the slideways of machine tools.

1,164,052 E. FOUQUET. Method of machining called milling-grinding.

1,164,053 E. FOUQUET. Machine for carrying out the method of milling-grinding.

1,164,054 E. FOUQUET. Method and device for the lubrication and the simultaneous refrigeration of workpieces and cutting tools during machining.

1,164,071 CIE DES MEULES NORTON SA. Method of applying hard particles to the surface of metal bodies in order to make them rough, and industrial products obtained by this method.

1,164,084 GEBR BOEHRINGER GmbH. Device for deburring the edges of a toothed wheel.

GERMAN

Patentblatt 1958 Vol 78 (18, 21-24) (Apr-May-June)

Applications Open to Public Inspection

1,029,167 H. HOLZMANN, DEUTSCHE GOLD- UND SILBER-SCHEIDEANSTALT VORMALS ROESSLER. Spinning nozzle of boron carbide.

1,029,256 C. KRUG, DISKUS-WERKE FRANKFURT/MAIN AG. Automatic feeding device for grinding machines.

1,030,567 G. ZAUMSEIL, VEB CARL ZEISS, JENA. Device for measuring surfaces under the microscope.

1,030,584 H. KRUG, DISKUS-WERKE FRANKFURT/MAIN AG. Measuring table for determining the components of a cutting force during the cutting process.

1,030,723 E. FOUQUET. Device for producing a rhythmic alternating movement of a rotating grinding wheel.

1,030,945 G. FEFER, D. W. RUDORFF, SPARCATRON LTD. Circuit arrangement for spark erosion using AC or DC.

1,031,001 A. H. SCHUETTE, H. BOSSINGER. Device for adjusting the tooth angle on a tool grinder.

1,031,002 E. MAYER, A. DOERR, LUDW LOEWE & CO AG. Profile projector with several adjustable magnifying stages for grinding or examining profiled workpieces and their counterparts, *eg* cutting punches and dies.

1,031,018 E. AHRENS, H.-R. KUEHN, ELECTRO-ACUSTIC GmbH. Gramophone needle with a leaf spring carrying two needle tips.

1,031,032 H. BECK, CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. Apparatus for determining the hardness of grains, or sclerometer.

1,031,172 W. H. MEAD, A. A. ZAMBRUNO, A. L. JETT. Apparatus for treating surfaces.

1,031,478 K. SWIATKIEWICZ. Glass cutter.

1,031,536 H. REDLICH, G. NEUMANN, H. ANGENENDT, TELDEC TELEFUNKEN-DECCA SCHALLPLATTEN GmbH. Mechano-electrical transformer for the production or the reproduction of a grooved sound track.

1,031,588 O. GROLL, VEB CARL ZEISS JENA. Floating bearing for precision machines.

1,031,675 W. SAUTER, O. WIELER. Workpiece table for machine-tools, in particular for grinding machines for producing chip breaking grooves on tools, *eg* lathe tools.

1,031,893 D. GEIST, STANDARD ELECTRIK AG. Method for shaping the outside of semiconductor arrangements, in particular for rectifying and amplifying purposes, with germanium or silicon semiconductors.

1,031,906 N. MIRONOFF, ATELIERS DES CHARMILLES SA. Device for the control of the electrode feed by means of a magnetic coil on spark erosion machines.

1,032,123 F. HUFSCHMIDT, H. BUERGER, W. FERD KLINGELNBERG SOEHNE. Method and device for grinding toothed workpieces uniformly divided along their circumference.

CORRIGENDA

See *Ind Diamond Abstr* 1958 Vol 15 p A45 (Mar)
Sintered diamond-metal tools for the machining of glass
For ' Cu-Su ' read ' Cu-Sn '.

See *Ind Diamond Abstr* 1958 Vol 15 p A102 (July)
Gorceixit from Felsőcebánya (Baia Sprie).
For ' (Ba-Ab phosphate) ' read ' (Ba-Al phosphate) '.

THE FOLLOWING REPRINTS ARE NOW OUT OF STOCK AND UNAVAILABLE

I 36—Optical methods for the examination of surfaces, by B. Frischmuth (*IDR*, 1946).
I 38—Diamond abrasive sawing disks, by W. Stern (*IDR*, 1946).
I 52—Third symposium on diamonds, with contributions by E. H. Kraus, W. B. Emerson, etc. (*Am Mineralogist/IDR*, 1946).
I 58—Investigations of the lapping process, by F. Eugene (*IDR*, 1947).
C 3—Diamond tools for plastics (*Plastics*, 1944).
C 5—Machining of light alloys with diamond tools (*Light Metals*, 1944).
C 7—Cutting tool nomenclature, by P. Grodzinski (*Machinery*, 1944).
C 8—Machining of copper, by P. Grodzinski (*Metal Industry*, 1944).
C 12—Machining brass, by W. Stern (*Metal Industry*, 1945).
C 16—Selection of industrial diamonds, by P. Grodzinski (*Mining Journal*, 1946).
C 25—The industrial diamond, by W. Stern (*S. African Engineering*, 1947).
C 38—Die technischen Fortschritte bei Diamantwerkzeugen in den letzten 5 Jahren (Technical developments with diamond tools during the last five years), by P. Grodzinski (*Feinwerktechnik*, 1950. In German).
C 86—A gear drive for a simple polariscope, by P. Grodzinski (*Lab Practice*, 1955).
D 13—Trade Names Index (*IDR*, 1945).
D 14—Glossary of technical terms, by W. J. Sansom (*IDR*, 1945).

This list includes those out-of-stock reprints already mentioned on p 8 of our current Reprint List.

GENERAL NOTES

The Industrial Diamond Information Bureau is included in the Diamond Research Organization of Industrial Distributors (Sales) Ltd (incorporated in the Union of South Africa), together with the Diamond Research Laboratory in Johannesburg.

Abstracts

The Bureau prepares abstracts of current scientific and technical literature, including patents, on industrial diamonds and associated subjects. These are published monthly in *Industrial Diamond Abstracts*, which is supplied free to those concerned with the use of diamonds for industrial purposes, and to specialist libraries. The publishers do not claim any copyright in respect of abstracts in this journal. No specific acknowledgement is made to other abstract journals, and no objection will be made to other abstract journals using the contents.

The list of journals (latest issue, September 1955) from which *Industrial Diamond Abstracts* is compiled will be supplied on request.

Library

The Bureau has a Reference Library which seeks to cover world literature on the application and production of diamond tools. It is kept up to date by a careful examination of new publications announced in abstract and technical journals, and covers, in addition to English, German, French and Russian books. The library specializes in technical and scientific pamphlets.

The book-stock up to December 1954 is listed in ' List of Books and Pamphlets in Special Library of Industrial Diamond Information Bureau ' (concluded September 1952 ; reprinted July 1955), and the ' Supplement to List of Books and Pamphlets ' (concluded December 1954).

Patent Abstracts

Patent lists are prepared from official patent journals of the major industrial countries, and patent abstracts in general from the printed patent specifications. Printed copies of British patent specifications accepted may be obtained from the Patent Office, Southampton Buildings, London WC 2, at 3s each. Numbers given under British applications for patents are for reference in all correspondence up to acceptance of the complete specification.

The following abbreviations are used :—BP for British Patent, USP for United States Patent, DAS for German Patent Application, DBP for German Patent (GP for German Patents issued prior to 1950), FP for French Patent, Canad P for Canadian Patent, and RP for Russian Patent.

Supply of Literature †

1. **Loan Service :** much of the literature abstracted in this journal is available in its original form, and can be borrowed for a period of fourteen days (in Great Britain only).

2. **Reprints :** copies of certain selected articles on industrial applications of diamond are available and can be supplied on request at a charge of 1s each, post free. New reprints are announced from time to time in this journal, and a classified list of reprints, dated April 1955, is available free on request.

Technical Information

The Bureau offers the resources of its considerable literature holdings to those seeking specific information on diamond tool and similar applications. Problems requiring fuller technical assistance can be referred to the Diamond Research Laboratory, Johannesburg.

Inquiries in connexion with these services should be made to Industrial Diamond Information Bureau, Industrial Distributors (Sales) Ltd, 2 Charterhouse Street, London EC 1.

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LIST OF PUBLICATIONS, AUGUST, 1958

***INDUSTRIAL DIAMOND ABSTRACTS:** issued monthly, from 1944 onwards, about 20 pp, 7⅞ x 9¾ in. Surveys technical, scientific, and patent literature.

***LIST OF BOOKS IN SPECIAL LIBRARY OF INDUSTRIAL DIAMOND INFORMATION BUREAU.** (Accessions up to Sep 1952). 216 pp, 5½ x 8½ in., name index, short subject index. **SUPPLEMENT.** (Up to Dec 1954). 64 pp, 5½ x 8½ in., name index, short subject index, list of abbreviations.

***LIST OF PERIODICALS—BIBLIOGRAPHY OF INDUSTRIAL DIAMOND APPLICATIONS:** Alphabetical, 8 pp, 7⅞ x 9¾ in., Sep 1955.

***LIST OF PERIODICALS IN THE INDUSTRIAL DIAMOND INFORMATION BUREAU LIBRARY AT MAY 31, 1958:** Alphabetical, 8 pp, 7⅞ x 9¼ in. A list of periodicals available for loan from the Industrial Diamond Information Bureau Library. This does not replace *List of Periodicals* (above), which is a list of periodicals abstracted in *Industrial Diamond Abstracts*, many of which are not held by the Library.

***THE DIAMOND RESEARCH LABORATORY:** 16 pp, illustr, 11 x 9 in. Rev ed, 1956.

***IDR REPRINT SERVICE:** Classified, authors' index, subject index of groups, 10 pp, 7⅞ x 9¾ in., Apr 1955. Supplement, 2 pp. (Reprints 1s each, post free).

SELECTED BIBLIOGRAPHIES:

* **Truing of grinding wheels** (from 1910 to 1951). 39 pp, 7⅞ x 9¾ in. 3rd rev ed, Feb 1952.

* **Diamond as cutting tool for metals and non-metallic materials.** 24 pp, 7⅞ x 9¾ in. 2nd rev ed, Nov 1950. Name index, 1951.

Hardness and hardness testing (from 1937 to 1955). 118 pp, name index, subject index, 7⅞ x 9¾ in. 1955-56. Price 5s 6d.

DIAMOND TOOL PATENTS (Patent Monographs)

IA: Machining metals and non-metallic substances, by P. Grodzinski, W. Jacobsohn. 2nd rev ed, 55 pp, 7⅞ x 9¾ in. Apr 1949. Price 10s.

II, IIs: Diamond abrasive wheels, by P. Grodzinski. 74 pp, 4 tables, name index, 7⅞ x 9¾ in. Aug 1948/49. Price 13s 6d.

III, IIIs: Truing of grinding wheels, by W. Jacobsohn. 133 pp, 82 illustr, name index, 7⅞ x 9¾ in. Dec 1948/49. Price £1.

IV: Polishing of gem diamonds, by W. Jacobsohn. 40 pp, 83 illustr, 1 table, name index, 7⅞ x 9¾ in. December, 1950. Price 12s 6d.

IA to IIIs available as compilation in Spirollo binding, price £2 9s.

AN OLD ENGLISH BOOK ON DIAMONDS: Photo-litho reprint of John Mawe's 'A treatise on diamonds,' London, 1823, with comments by P. Grodzinski. 96 pp, 7 x 4¾ in., illustr (some coloured). Dec 1950. Price 12s 6d.

THE PRINCIPLES AND DESIGN OF A NUCLEAR RADIATION COUNTER WHICH USES A DIAMOND AS ITS DETECTOR, by W. F. Cotty. 18 pp, illustr, 7⅞ x 9¾ in. Oct 1956. Price 2s 6d.

DATA SHEETS FOR THE DIAMOND TOOL DESIGNER AND MAKER—Definition and designation of angles: Comparison of names for tool angles: Plane of chip flow: Clearance and rake angles: Minimum clearance for diamond boring tools: Economic layout of tool tips: Height position of turning tools: Accepted standards. 1945, reprinted Oct 1956. Price 5s.

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* *Publication free of charge.*

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